Q.1 If the 6-digit number N46M37 is divisible by 11, then which of the options below can give a possible correct relation between M and N?

A. M = N
B. M + N = 2
C. M - N = 1
D. M - N = -2

Answer: D

Sol: Given:

The 6-digit number is N46M37 and it is divisible by 11.

Formula Used :

For a number to be divisible by 11,
$$(\text{Sum of digits at odd places}) - (\text{Sum of digits at even places}) = 0 \text{ or a multiple of } 11$$

Solution:

Write the number with place positions:

Position	Digit
1 (odd)	N
2 (even)	4
3 (odd)	6
4 (even)	M
5 (odd)	3
6 (even)	7

Sum of digits at odd places:
N + 6 + 3 = N + 9

Sum of digits at even places:
4 + M + 7 = M + 11

Apply divisibility rule:
(N + 9) - (M + 11) = 0
N - M - 2 = 0
M - N = -2

Q.2 Two letters are selected from the word 'TENDULKAR'. The probability that both are vowels is:

A. $\dfrac{2}{9}$

B. $\dfrac{1}{12}$

C. $\dfrac{5}{9}$

D. $\dfrac{5}{12}$

Answer: B

Sol: Given:

Word: TENDULKAR

Task: Select 2 letters at random.

Find the probability that both selected letters are vowels.

Concept Used:

Probability = $\dfrac{\text{Favorable outcomes}}{\text{Total outcomes}}$

Combination formula: C(n, k) = $\dfrac{n!}{k!(n-k)!}$

Solution:

Total letters in "TENDULKAR":

T, E, N, D, U, L, K, A, R → Total letters = 9

Total vowels in "TENDULKAR":

E, U, A → Vowels = 3

Total consonants = 9 - 3 = 6

Total ways to choose 2 letters out of 9:

C(9, 2) = $\dfrac{9 \times 8}{2 \times 1} = 36$

Favorable outcomes (both letters are vowels):

C(3, 2) = $\dfrac{3 \times 2}{2 \times 1} = 3$

Probability = $\dfrac{\text{Favorable outcomes}}{\text{Total outcomes}} = \dfrac{3}{36} = \dfrac{1}{12}$

Q.3 4 years ago, the age of a father was 37 years more than twice his son's age. After how many years, from now, will he be twice his son's age?

A. 31

B. 33

C. 30

D. 35

Answer: B

Sol: Given:

4 years ago, father's age = 37 years more than twice his son's age.

We need to find after how many years from now the father will be twice his son's age.

Solution:

Let present ages be:

Father = F years

Son = S years

Condition 4 years ago:

F - 4 = 2(S - 4) + 37

F - 4 = 2S - 8 + 37 = 2S + 29

F = 2S + 33 ....(1)

Condition after (t) years (father twice son's age):

F + t = 2(S + t)

F + t = 2S + 2t

F = 2S + t ....(2)

Now, Equating 1 and 2

2S + 33 = 2S + t

t = 33

So, after 33 years, the father will be twice his son's age.

Q.4 Simplify: $3\left(\left(\dfrac{5}{3}\right)x^2 - 28x + 15\right) - 5(x^2 + 6x - 15)$

A. 114x + 120
B. −114x − 120
C. 114x − 120
D. −114x + 120

Answer: D

Sol: **Given:**
$$3\left(\dfrac{5}{3}x^2 - 28x + 15\right) - 5(x^2 + 6x - 15)$$
Concept Used:
Algebraic simplification and distributive property
Formula Used:
$a(b + c + d) = ab + ac + ad$
Solution:

$$3\left(\dfrac{5}{3}x^2\right) = 5x^2$$

$$3(-28x) = -84x$$

$$3(15) = 45$$

$$=> 3\left(\dfrac{5}{3}x^2 - 28x + 15\right) = 5x^2 - 84x + 45$$

$$-5(x^2 + 6x - 15) = -5x^2 - 30x + 75$$

Adding both expressions:

$$(5x^2 - 84x + 45) + (-5x^2 - 30x + 75)$$

$$= -114x + 120$$
Final Answer:

$\boxed{-114x + 120}$

Q.5 In $\triangle ABC$, $DE \parallel AC$, where D and E are the points on sides AB and BC, respectively. If $BD = 2$cm and $AD = 19$cm, then what is the ratio of the area of $\triangle BDE$ to the trapezium $ADEC$?

A. 12 : 435
B. 10 : 11
C. 4 : 437
D. 13 : 8

Answer: C

Sol: **Given:**

$BD = 2$ cm
$AD = 19$ cm

Formula Used:

$$\dfrac{\text{area}(\triangle BDE)}{\text{area}(\triangle BAC)} = \left(\dfrac{BD}{BA}\right)^2$$

$\text{area}(ADEC) = \text{area}(BAC) - \text{area}(BDE)$

Solution:

$BA = BD + AD = 2 + 19 = 21$ cm

$\dfrac{BD}{BA} = \dfrac{2}{21}$

$\left(\dfrac{BD}{BA}\right)^2 = \left(\dfrac{2}{21}\right)^2 = \dfrac{4}{441}$

$\text{area}(BDE) : \text{area}(ADEC) = \dfrac{4}{441} : \left(1 - \dfrac{4}{441}\right)$

$\qquad = \dfrac{4}{441} : \dfrac{437}{441}$

$\qquad = 4 : 437$

$\therefore \text{area}(\triangle BDE) : \text{area}(\text{trapezium } ADEC) = 4 : 437$

Q.6 In the following triads, each group of letters is related to the subsequent one following a certain logic. Select from the given options, the one which follows the same logic.

LIVE – ELVI – LEIV

HANG – GHNA – HGAN

A. PORT – TPOR – ORTP
B. REDS – ERDS – SEDR
C. DUSK – KDSU – DKUS
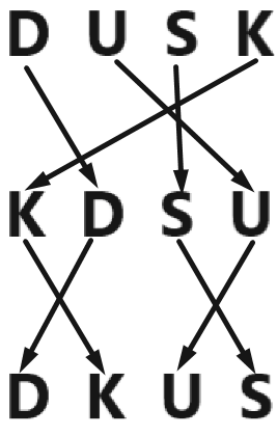D. PAIN – NPIA – PANI

Answer: C

Sol: Given:

LIVE – ELVI – LEIV

HANG – GHNA – HGAN

Logic: Letter position has been interchanged.

DUSK – KDSU – DKUS

Thus, correct option is (c).

Q.7 If '+' means 'division', '÷' means 'multiplication', '−' means 'addition' and '×' means 'subtraction', then find the value of

15 + 3 − 8 ÷ 9 × 7

A. 81
B. 64
C. 72

D. 70

Answer: D

Sol: **Given**: 15 + 3 − 8 ÷ 9 × 7

Sign   + ÷ - ×

New Sign ÷ × + -

Given equation is solve by **BODMAS** rule.

Operation preference wise	Symbol
Brackets	[], , ()
Orders, of	$(power)$, $\sqrt{}(root)$, of
Division	÷
Multiplication	×
Addition	+
Subtraction	−

New equation 15 ÷ 3 + 8 × 9 - 7

= 5 + 8×9 - 7

= 5 + 72 - 7

= 77 - 7

= 70

Thus, correct option is (d).

Q.8 X, Y and Z invested a sum in the ratio of 58 : 72 : 20, respectively. If they earned a total profit of Rs. 3,750 at the end of the year, what is the difference between the shares of Y and Z?

A. Rs. 1,300
B. Rs. 1,404
C. Rs. 1,231
D. Rs. 1,254

Answer: A

Sol: **Given:**

The ratio of investments of X, Y, and Z = 58 : 72 : 20

Total profit = Rs. 3750

Time period is the same for all (1 year)

Formula Used:

$$\text{Individual Share} = \frac{\text{Individual Ratio}}{\text{Sum of Ratios}} \times \text{Total Profit}$$

Solution:
Sum of the ratio parts: 58 + 72 + 20 = 150

Share of Y: $\frac{72}{150} \times 3750$ = 1800

Share of Z: $\frac{20}{150} \times 3750$ = 500

Difference between shares of Y and Z:

1800 - 500 = Rs. 1300

Alternate Solution(Exam-Hall trick):

$$\text{Ratio} = 58:72:20 \xrightarrow{\div 2} 29:36:10 \quad (X:Y:Z)$$

Total parts $= 29 + 36 + 10 = 75$

Diff $(Y-Z) = 36 - 10 = 26$ parts

$$75 \text{ units} \longrightarrow 3750$$
$$1 \text{ unit} \longrightarrow \frac{3750}{75} = 50$$

Req. Diff $= 26 \times 50 = \boxed{1300}$

Q.9 Kings and Queens of black colour are taken out from a deck of 52 playing cards. A card is drawn from the remaining well-shuffled cards. Probability of getting a spade card is:

A. $\dfrac{1}{4}$

B. $\dfrac{11}{13}$

C. $\dfrac{11}{48}$

D. $\dfrac{11}{52}$

Answer: C

Sol: Given:

A standard deck has 52 cards

Black Kings and Queens are removed

Total removed = 4 cards

Remaining cards = 52 - 4 = 48

Formula Used:

$$\text{Probability} = \frac{\text{Favorable outcomes}}{\text{Total outcomes}}$$

Solution:

Spade cards in a full deck = 13

Removed spade cards: King and Queen => 2 cards removed

Remaining spade cards = 13 - 2 = 11

$$\text{Probability} = \frac{11}{48}$$

Q.10 3 years ago from now, the age of father was 14 years more than twice his son's age. After how many years, from now, will he be twice his son's age?

A. 12

B. 14

C. 8

D. 11

Answer: D

Sol: Given:

3 years ago: Father's age = 14 + 2 × (son's age).

Solution:

Let current ages be F (father) and S (son).

3 years ago: Father's age = 14 + 2 × (son's age).

Past relation: F-3 = 14 + 2(S-3)

F - 3 = 14 + 2S - 6

F = 2S + 11.

Future condition after (t) years: F + t = 2(S + t)
(2S + 11) + t = 2(S + t)

2S + 11 + t = 2S + 2t

t = 11.

So, he will be twice his son's age after 11 years.

Q.11 The profit made on a product is 66%. What is the loss percentage (rounded off to two decimal place) incurred on the sale if the figures of both the cost price and the selling price are interchanged?

A. 39.76%
B. 38.40%
C. 41.12%
D. 38.57%

Answer: A

Sol: Given:
Profit = 66%

Formula Used:

$$\text{Profit \%} = \frac{\text{SP} - \text{CP}}{\text{CP}} \times 100$$

$$\text{Loss \%} = \frac{\text{CP} - \text{SP}}{\text{CP}} \times 100$$

Solution:

Let CP = 100

SP = 166

New CP = 166, New SP = 100

Loss = 66

$$\text{Loss \%} = \frac{66}{166} \times 100$$

Loss % = $39.759\% \approx 39.76\%$

Q.12 The mean proportional between $12 + 3\sqrt{4}$ and $16 - 4\sqrt{4}$ is:

A. 7

B. 22

C. 19

D. 12

Answer: D

Sol: Given:

$12 + 3\sqrt{4}$ and $16 - 4\sqrt{4}$

Concept Used:

Mean proportional

Formula Used:

Mean proportional $= \sqrt{ab}$

Solution:

$12 + 3\sqrt{4} = 12 + 3 \times 2$

$= 18$

$16 - 4\sqrt{4} = 16 - 4 \times 2$

$= 8$

Mean proportional $= \sqrt{18 \times 8}$

$= \sqrt{144}$

$= 12$

Final Answer:

12

Q.13 A man spends 28% of his monthly salary on house rent. If every month, he also spends ₹687 on conveyance and ₹7,483 on grocery and saves the remaining ₹218, his monthly salary is:

A. ₹11,738

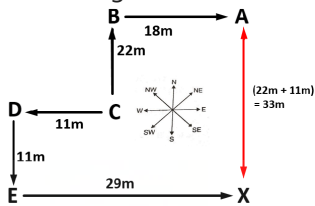B. ₹11,650

C. ₹11,594

D. ₹11,743

Answer: B

Sol: **Given:**

House rent $= 28\%$ of $x = 0.28x$

Conveyance expense $= 687$

Grocery expense $= 7483$

Savings $= 218$

Concept Used:

Income $=$ Expenditure $+$ Savings

Formula Used:

Savings $=$ Salary $-$ (Rent $+$ Other Expenses)

Solution:

Let monthly salary $= x$

$x - (0.28x + 687 + 7483) = 218$

$x - (0.28x + 8170) = 218$

$x - 0.28x = 218 + 8170$

$0.72x = 8388$

$x = \dfrac{8388}{0.72}$

$x = 11650$

Final Answer:

Monthly salary $= ₹11650$

Q.14 Point A is 18 m to the east of Point B. Point B is 22 m to the north of Point C. Point D is 11 m to the west of Point C. Point E is 11 m to the south of point D. Point X is 29 m to the east of Point E.

What is the shortest distance between Point A and Point X?

A. 11 m

B. 33 m

C. 21 m

D. 10 m

Answer: B

Sol: **Given:**

Point A is 18 m to the east of Point B. Point B is 22 m to the north of Point C.

Point D is 11 m to the west of Point C.
Point E is 11 m to the south of point D.
Point X is 29 m to the east of Point E.
From the given information path diagram will be;

So, the shortest distance between Point A and Point X is **33m.**
Thus, the correct option is: (b)

Q.15 The diameter of the base and slant height of a right circular cone are 30 cm and 113 cm, respectively. Find the volume (in cm³) of the given cone. $\left(Use \pi = \dfrac{22}{7}\right)$

A. 26,360
B. 26,375
C. 26,400
D. 26,435

Answer: C

Sol: **Given:**
$d = 30\text{cm}$
$l = 113\text{cm}$
$\pi = \dfrac{22}{7}$

Concept Used:
$l^2 = r^2 + h^2$

Formula Used:
$V = \dfrac{1}{3}\pi r^2 h$

Solution:
$r = \dfrac{30}{2} = 15\text{cm}$
$h = \sqrt{113^2 - 15^2}$
$h = \sqrt{12769 - 225}$
$h = \sqrt{12544} = 112\text{cm}$
$V = \dfrac{1}{3} \times \dfrac{22}{7} \times 15^2 \times 112$
$V = \dfrac{1}{3} \times 79200$
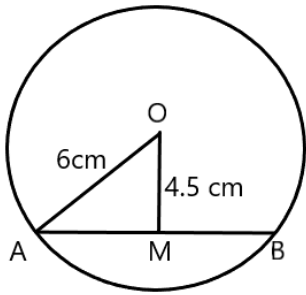$V = 26400$

Final Answer:
26400cm^3

Q.16 A chord AB is drawn in a circle with centre O and radius 6 cm. If the shortest distance between the centre and the chord is 4.5 cm, then find the length of chord AB.

A. 2√7 cm
B. 4√7 cm
C. $3\sqrt{7}$cm
D. √7 cm

Answer: C

Sol: **Given:**
Radius r = 6 cm, perpendicular distance from centre to chord d = 4.5 cm.

Solution:

Let M be midpoint of chord AB. Then OM⊥AB.

In right △ OMA: $\left(\dfrac{AB}{2}\right)^2 = r^2 - d^2$

AB $= 2\sqrt{r^2 - d^2}$

AB $= 2\sqrt{6^2 - 4.5^2} = 2\sqrt{36 - 20.25} = 2\sqrt{15.75} = 2\sqrt{\dfrac{63}{4}} = \sqrt{63} = 3\sqrt{7}\,$cm

---

Q.17 Each of P, Q, R, S, T, U and V has an exam on a different day of a week starting from Monday and ending on Sunday of the same week. P has the exam on Tuesday. Only two people have exams after R. S has the exam immediately before Q but after R. U has the exam immediately after V. How many people have exams between T and S?

A. One
B. Three
C. Four
D. Two

Answer: C

Sol: Given:

Each of P, Q, R, S, T, U and V has an exam on a different day of a week starting from Monday and ending on Sunday of the same week.
P has the exam on Tuesday.
Only two people have exams after R.
S has the exam immediately before Q but after R.
U has the exam immediately after V.

From the given information arrangement will be:

Day	Person
Monday	**T**
Tuesday	P
Wednesday	V
Thursday	U
Friday	R
Saturday	S
Sunday	Q

So, **Four (4)** people have exams between T and S.
Thus, the correct option is: (c)

Q.18 Which of the given numbers will replace the question mark (?) in the following series to make it logically complete?
235, 246, 268, 301, 345, ?

A. 401
B. 400
C. 410
D. 445

Answer: B

Sol: **Given**: 235, 246, 268, 301, 345, ?

Logic: Numbers are increasing multiple of 11.

235 + 11 = 246

246 + 22 = 268

268 + 33 = 301

301 + 44 = 345

Next: 11 × 5 = 55

345 + 55 = **400**

So, the missing term is **400**.

Thus, correct option is (b).

Q.19 If letters of the English alphabet are written in reverse order then which letter is 5th to the right of 12th letter from the right?

A. L

B. G

C. O

D. J

Answer: B

Sol: **Given**: I

English alphabet:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z

English alphabets are written in reverse order

:Z Y X W V U T S R Q P O N M L K J I H G F E D C B A

The 12th letter from the right = L

Now count 5 letters to the right of L → **G**

So, **G** letter is 5th to the right of 12th letter from the right.

Thus, correct option is (b).

Q.20 What is the main idea of the passage?

Read the passage and answer the following questions.

When a machine "learns," it does not learn like a student memorising notes. It learns by adjusting patterns. Consider a recommendation system that suggests videos or articles. At first, it has only rough signals: what you clicked, how long you stayed, what you skipped. From these traces it builds a probability model—an internal guess about what might keep you engaged. The more it predicts correctly, the more confident it becomes, and the more it shapes what you see next.

This design creates a quiet feedback loop. If the system shows you content similar to what you already watched, you are more likely to watch it again, which then "confirms" the system's guess. Gradually, the range of options can narrow—not because alternatives disappear, but because they are rarely offered. In such a loop, the system is not neutral. It actively organises attention. The same mechanism that helps you discover relevant material can also trap you in repetitive preferences or amplify extreme content that triggers strong reactions.

Developers try to break this loop with "diversity" measures, inserting unfamiliar items to test whether your interests are broader than your history suggests. But this introduces a tension: people often say they want variety, yet they frequently reward familiarity with longer watch time. Platforms therefore face a problem-solution choice. If they optimise only for engagement, they risk creating echo chambers. If they optimise for exploration and well-being, they may lose short-term clicks. The central question becomes ethical as well as technical: should a system maximise what users consume, or help users choose more consciously?

A. Recommendation systems are harmless because they only show random content

B. The passage explains how recommendation systems create feedback loops that can narrow choices, and why balancing engagement with diversity is an ethical problem

C. The passage argues that users have no role in shaping what they see online

D. The passage claims that "learning" in machines is identical to human learning

Answer: B

Sol: The correct answer is option (b).

• The passage describes pattern-based learning in recommendations, then shows the feedback loop that narrows exposure.

• It ends by framing a problem-solution tension (engagement vs exploration) and an ethical question.

Other options are incorrect because:

• (a) The passage says the system organises attention, not randomness.

• (c) User behaviour (clicks, watch time) is central to the loop.

• (d) It explicitly says machines do not learn like students.

Q.21 Which detail best supports the idea of a "feedback loop"?

Read the passage and answer the following questions.

When a machine "learns," it does not learn like a student memorising notes. It learns by adjusting patterns. Consider a recommendation system that suggests videos or articles. At first, it has only rough signals: what you clicked, how long you stayed, what you skipped. From these traces it builds a probability model—an internal guess about what might keep you engaged. The more it predicts correctly, the more confident it becomes, and the more it shapes what you see next.

This design creates a quiet feedback loop. If the system shows you content similar to what you already watched, you are more likely to watch it again, which then "confirms" the system's guess. Gradually, the range of options can narrow—not because alternatives disappear, but because they are rarely offered. In such a loop, the system is not neutral. It actively organises attention. The same mechanism that helps you discover relevant material can also trap you in repetitive preferences or amplify extreme content that triggers strong reactions.

Developers try to break this loop with "diversity" measures, inserting unfamiliar items to test whether your interests are broader than your history suggests. But this introduces a tension: people often say they want variety, yet they frequently reward familiarity with longer watch time. Platforms therefore face a problem-solution choice. If they optimise only for engagement, they risk creating echo chambers. If they optimise for exploration and well-being, they may lose short-term clicks. The central question becomes ethical as well as technical: should a system maximise what users consume, or help users choose more consciously?

A. The system uses electricity to run servers
B. Watching similar content makes you more likely to watch it again, which then confirms the system's guess and shapes future suggestions
C. Users always prefer unfamiliar content
D. Platforms have no access to user behaviour

Answer: B

Sol: The correct answer is option (b).
- The passage directly explains the cycle: recommendation → repeated viewing → confirmation → further similar recommendation.
- This circular reinforcement is precisely what a feedback loop means in context.

Other options are incorrect because:
- (a) is irrelevant.
- (c) contradicts the text's point about familiarity.
- (d) contradicts the "signals" listed (clicks, time, skips).

Q.22 Which situation best reflects the passage's warning about "amplifying extreme content"?

Read the passage and answer the following questions.

When a machine "learns," it does not learn like a student memorising notes. It learns by adjusting patterns. Consider a recommendation system that suggests videos or articles. At first, it has only rough signals: what you clicked, how long you stayed, what you skipped. From these traces it builds a probability model—an internal guess about what might keep you engaged. The more it predicts correctly, the more confident it becomes, and the more it shapes what you see next.

This design creates a quiet feedback loop. If the system shows you content similar to what you already watched, you are more likely to watch it again, which then "confirms" the system's guess. Gradually, the range of options can narrow—not because alternatives disappear, but because they are rarely offered. In such a loop, the system is not neutral. It actively organises attention. The same mechanism that helps you discover relevant material can also trap you in repetitive preferences or amplify extreme content that triggers strong reactions.

Developers try to break this loop with "diversity" measures, inserting unfamiliar items to test whether your interests are broader than your history suggests. But this introduces a tension: people often say they want variety, yet they frequently reward familiarity with longer watch time. Platforms therefore face a problem-solution choice. If they optimise only for engagement, they risk creating echo chambers. If they optimise for exploration and well-being, they may lose short-term clicks. The central question becomes ethical as well as technical: should a system maximise what users consume, or help users choose more consciously?

A. A library displays books in alphabetical order
B. A platform promotes sensational videos because they generate strong reactions, leading the system to recommend more of the same
C. A teacher gives students different topics to expand knowledge
D. A website removes recommendation features entirely to reduce data use

Answer: B

Sol: The correct answer is option (b).
- The passage states that strong reactions can be rewarded by engagement metrics, causing the system to amplify extremes.
- Option (b) mirrors that mechanism: reaction-driven promotion → more similar recommendations.

Other options are incorrect because:
- (a) is neutral sorting, not engagement optimisation.
- (c) supports diversity, opposite of amplification.
- (d) is not discussed; the passage focuses on balancing objectives within the system.

Q.23 What is the organisational structure of the passage?

Read the passage and answer the following questions.

When a machine "learns," it does not learn like a student memorising notes. It learns by adjusting patterns. Consider a recommendation system

builds a probability model—an internal guess about what might keep you engaged. The more it predicts correctly, the more confident it becomes,

and the more it shapes what you see next.

This design creates a quiet feedback loop. If the system shows you content similar to what you already watched, you are more likely to watch it again, which then "confirms" the system's guess. Gradually, the range of options can narrow—not because alternatives disappear, but because they are rarely offered. In such a loop, the system is not neutral. It actively organises attention. The same mechanism that helps you discover relevant material can also trap you in repetitive preferences or amplify extreme content that triggers strong reactions.

Developers try to break this loop with "diversity" measures, inserting unfamiliar items to test whether your interests are broader than your history suggests. But this introduces a tension: people often say they want variety, yet they frequently reward familiarity with longer watch time. Platforms therefore face a problem-solution choice. If they optimise only for engagement, they risk creating echo chambers. If they optimise for exploration and well-being, they may lose short-term clicks. The central question becomes ethical as well as technical: should a system maximise what users consume, or help users choose more consciously?

A. Problem and solution: it identifies echo-chamber risk and proposes diversity measures as a partial remedy, then discusses trade-offs
B. Chronological history of the internet from 1990 to 2020
C. Compare and contrast of two different languages
D. A mythological story explaining human curiosity

Answer: A

Sol: The correct answer is option (a).
- The passage presents a problem (narrowing, echo chambers, amplification) and a solution attempt (diversity measures).
- It then evaluates the trade-off between engagement and exploration, keeping the structure problem-solution with analysis.
Other options are incorrect because:
- (b) No timeline is given.
- (c) No language comparison occurs.
- (d) Not mythology.

Q.24 The style of the passage is best described as:
Read the passage and answer the following questions.
When a machine "learns," it does not learn like a student memorising notes. It learns by adjusting patterns. Consider a recommendation system that suggests videos or articles. At first, it has only rough signals: what you clicked, how long you stayed, what you skipped. From these traces it builds a probability model—an internal guess about what might keep you engaged. The more it predicts correctly, the more confident it becomes, and the more it shapes what you see next.

This design creates a quiet feedback loop. If the system shows you content similar to what you already watched, you are more likely to watch it again, which then "confirms" the system's guess. Gradually, the range of options can narrow—not because alternatives disappear, but because they are rarely offered. In such a loop, the system is not neutral. It actively organises attention. The same mechanism that helps you discover relevant material can also trap you in repetitive preferences or amplify extreme content that triggers strong reactions.

Developers try to break this loop with "diversity" measures, inserting unfamiliar items to test whether your interests are broader than your history suggests. But this introduces a tension: people often say they want variety, yet they frequently reward familiarity with longer watch time. Platforms therefore face a problem-solution choice. If they optimise only for engagement, they risk creating echo chambers. If they optimise for exploration and well-being, they may lose short-term clicks. The central question becomes ethical as well as technical: should a system maximise what users consume, or help users choose more consciously?

A. Technical yet reflective, using examples to explain an ethical dilemma
B. Sarcastic and ridiculing technology companies
C. Purely narrative with characters and dialogue
D. Emotional and celebratory

Answer: A

Sol: The correct answer is option (a).
- It explains mechanisms (signals, probability model, feedback loop) in simple terms and then reflects on ethics (well-being vs clicks).
- The passage uses an example (recommendations) to make a broader argument.
Other options are incorrect because:
- (b) No mocking language appears.
- (c) There are no characters/dialogue.
- (d) It is not celebratory; it is evaluative.

Q.25 What should come in place of the question mark ? in the given series based on the English alphabetical order?
ZFN, FLT, LRZ, RXF, ?

A. XSD
B. XLD
C. XDL
D. XDS

Answer: C

Sol: Given:
ZFN, FLT, LRZ, RXF, ?

Logic: Each letter getting + 6

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

First letters:
Z + 6 = F, F + 6 = L, L + 6 = R, R + 6 = X
Second letters:
F + 6 = L, L + 6 = R, R + 6 = X, X + 6 = D
Third letters:
N + 6 = T, T + 6 = Z, Z + 6 = F, F + 6 = L
Next group formed = **X D L**
Thus, correct option is (c).

Q.26 Based on the English alphabetical order, three of the following four letter-clusters are alike in a certain way and thus form a group. Which letter-cluster DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

A. BVQN
B. EYTQ
C. AUPM
D. FZVR

Answer: D

Sol:

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Logic:
In each cluster, letters move backward in alphabetical order by −6, −5, and −3.
a) BVQN
B −6 → V, V −5 → Q, Q −3 → N
b) EYTQ
E −6 → Y, Y −5 → T, T −3 → Q
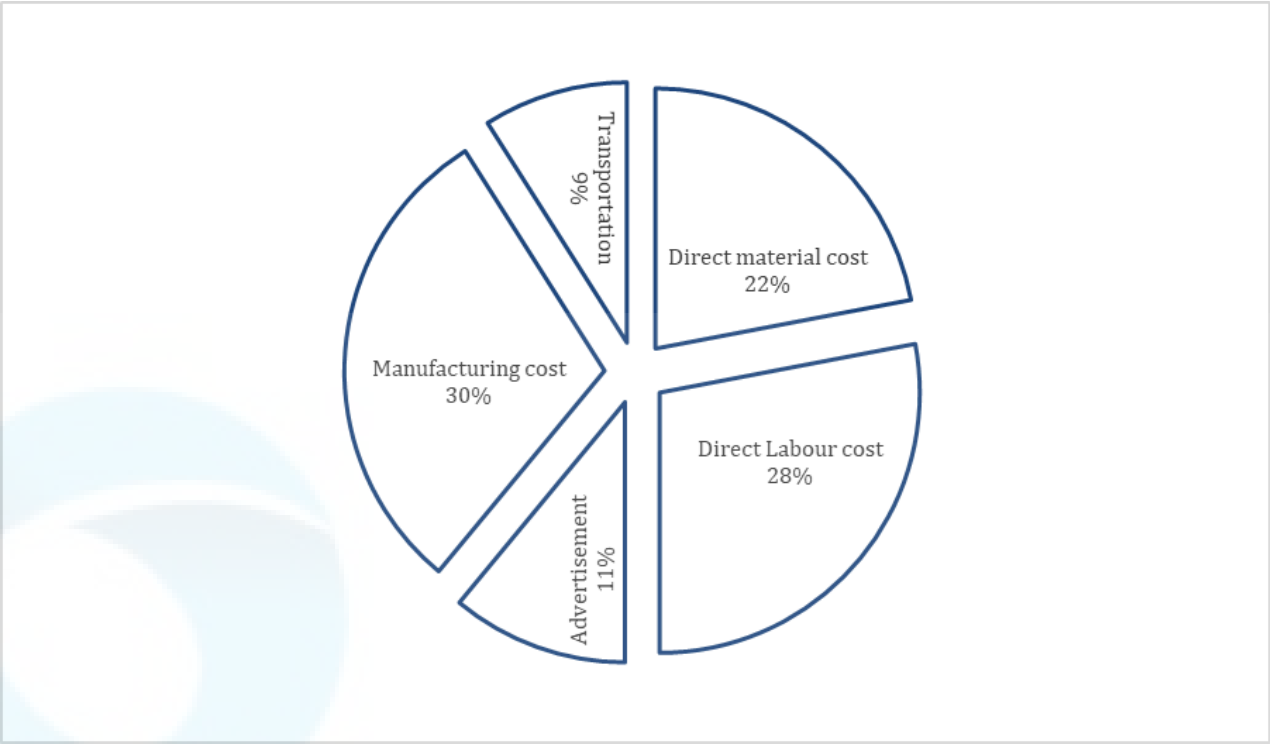c) AUPM
A −6 → U, U −5 → P, P −3 → M
d) FZVR
F −6 → Z, Z −5 → V, V −4 → R
Thus, the letter-cluster that does not belong to the group is FZVR.
Correct option is (D).

Q.27 The following pie-chart shows the percentage distribution of the expenditure incurred in manufacturing a ceiling fan. Study the pie-chart and answer the question.

If 10,000 ceiling fans are manufactured and the transportation cost on them amounts to ₹36,000, then what should the selling price of each ceiling fan be, so that the manufacturer can earn a profit of 50%?

A. ₹40
B. ₹75
C. ₹50
D. ₹60

Answer: D

Sol: Given:
Expenditure Distribution (Pie-Chart Data):
Manufacturing Cost = 30%
Advertisement = 11%
Direct Material Cost = 22%
Direct Labour Cost = 28%
Transportation Cost = 9%
Total Fans Manufactured = 10,000
Desired Profit = 50%
Solution:
Transportation Cost = ₹36,000
Let Total Cost (100%) = C
9% of $C = 36,000$

0.09C = 36,000

$$C = \frac{36,000}{0.09} = ₹4,00,000$$

$$\text{Cost per Fan} = \frac{\text{Total Cost}}{\text{Number of Fans}} = \frac{4,00,000}{10,000} = ₹40$$

Selling Price per Fan = Cost per Fan + 50% Profit
$$= ₹40 + (0.50 \times 40) = ₹40 + ₹20 = ₹60$$

Q.28 In a code language, TEMPLE is written as 053625. What is the code for PRAY?

A. 6815
B. 6814
C. 6816
D. 6915

Answer: A

Sol: Given:
TEMPLE → 053625
Logic: Each letter is replaced by the unit digit of its position in the English alphabet.
TEMPLE → 053625
T = 20 → 0
E = 5 → 5

M = 13 → 3
P = 16 → 6
L = 12 → 2
Now for PRAY:
P = 16 → 6
R = 18 → 8
A = 1 → 1
Y = 25 → 5
So, PRAY = **6815**
Thus, correct option is (a).

Q.29 The distance between two stations A and B is 420 km. A train starts from A at 3 p.m. and travels towards B at a speed of 60 km/h. Another train starts from B at 4 p.m. and travels towards A at a speed of 30 km/h. At what time do they meet?

A. 10 p.m.
B. 10:30 p.m.
C. 9 p.m.
D. 8 p.m.

Answer: D

Sol: Given:
Distance between A and B = 420 km

Speed of Train 1 (from A) = 60 km/h

Speed of Train 2 (from B) = 30 km/h

Train 1 starts at 3 p.m.

Train 2 starts at 4 p.m.

Formula Used:
Distance = Speed × Time

Solution:
Train 1 travels for 1 hour before Train 2 starts, so it covers:
60 km/h × 1 h = 60 km

Remaining distance = 420 km – 60 km = 360 km

Relative speed = 60 km/h + 30 km/h = 90 km/h

Time taken to meet after 4 p.m. = $\dfrac{360}{90}$ = 4 hours

Meeting time = 4 p.m. + 4 hours = **8:00 p.m.**

Q.30 Below are given statements followed by some conclusions. You have to take the given statements to be true even if they seem to be at variance with the commonly known facts and then decide which of the given conclusions logically follow(s) from the given statements.
Statements:
1. Some Editors are Actors.
2. All the Actors are Writers.
Conclusions:
I. Some Editors are Writers.
II. No Actor is Editor.

A. Neither Conclusion I nor II follows.
B. Only Conclusion II follows.
C. Only Conclusion I follows.
D. Either Conclusion I or II follows.

Answer: C

Sol: **Statements**:

1. Some Editors are Actors.
2. All the Actors are Writers.

From the given statements possible Venn diagram will be.

Conclusions:

I. Some Editors are Writers. (**True**, some editors are actors and all actors are writers, so that means some editors are writers).

II. No Actor is Editor. (**False**, from statement some editors are actors).

So, **Only Conclusion I follows.**

Thus, correct option is (c).

Q.31 Let AB and CD be two parallel lines and PQ be a transversal such that PQ intersects AB at the point R and CD at the point S, respectively. If ∠BRP = (2x + 13)° and ∠DSP = (3x − 22)°, then find ∠CSP.
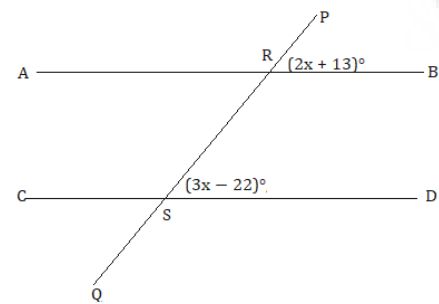
A. 105°

B. 95°

C. 97°

D. 83°

Answer: C

Sol: **Given:**

Let AB and CD be two parallel lines and PQ be a transversal such that PQ intersects AB at the point R and CD at the point S, respectively. If ∠BRP = (2x + 13)° and ∠DSP = (3x − 22)°, then find ∠CSP.

Solution:

Since AB ∥ CD and PQ is a transversal, ∠BRP and ∠DSP are alternate interior angles.

According to the alternate interior angle theorem, alternate interior angles are congruent when two parallel lines are cut by a transversal.

Therefore, we can set the angles equal to each other:

∠BRP = ∠DSP

(2x + 13)° = (3x − 22)°

13 = x - 22

13 + 22 = x

x = 35

∠DSP = 3(35) - 22 = 105 - 22 = 83°

∠CSP = 180°- 83° = 97°

Q.32 What is the mode of the data given below? [Give your answer correct to 2 decimal places.]

Age in years	10-20	20-30	30-40	40-50	50-60	60-70	70-80
No. of patients	29	35	25	10	18	34	17

A. 39.44

B. 6.56

C. 23.75

D. 22.58

Answer: C

Sol: Formula Used:

$$\text{Mode} = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h$$

Solution:

Highest frequency $= 35$

Modal class $= 20\text{-}30$

$l = 20$

$h = 10$

$f_1 = 35$

$f_0 = 29$

$f_2 = 25$

$$\text{Mode} = 20 + \frac{35 - 29}{2(35) - 29 - 25} \times 10$$

$$= 20 + \frac{6}{70 - 54} \times 10$$

$$= 20 + \frac{6}{16} \times 10$$

$$= 20 + 3.75$$

$$= 23.75$$

Final Answer:

23.75

Q.33 The average of eight numbers is 14. The average of five of these numbers is 14. The average of the remaining three numbers is:

A. 13

B. 16

C. 14

D. 15

Answer: C

Sol: **Given**

Average of 8 numbers $= 14$

Average of 5 numbers $= 14$

Formula Used

Total Sum $=$ Average $\times$ Number of Terms

Solution

Total sum of 8 numbers $= 14 \times 8 = 112$

Sum of 5 numbers $= 14 \times 5 = 70$

Sum of remaining 3 numbers $= 112 - 70 = 42$

Average of remaining 3 numbers $= \dfrac{42}{3} = 14$

Final Answer

$\boxed{14}$

Q.34 Find the value of $\dfrac{(0.2)^3 + (0.04)^3}{(0.1)^2 \times 0.1 + (0.02) \times (0.02)^2}$

A. 9

B. 6

C. 7

D. 8

Answer: D

Sol: **Given:**

$$\frac{(0.2)^3 + (0.04)^3}{(0.1)^2 \times 0.1 + (0.02) \times (0.02)^2}$$

Solution:

$$\frac{(0.2)^3 + (0.04)^3}{(0.1)^2 \times 0.1 + (0.02) \times (0.02)^2}$$

$$= \frac{0.008 + 0.000064}{0.01 \times 0.1 + 0.02 \times 0.0004}$$

$$= \frac{0.008 + 0.000064}{0.001 + 0.000008}$$

$$= \frac{0.008064}{0.001008} \approx 8$$

Option (D) is right.

Q.35 Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order. No box is kept above F. Only three boxes are kept between F and E. Only one box is kept between G and C. C is kept immediately above E. Only four boxes are kept between G and A. B is kept at some place above D. How many boxes are kept above E?

A. Two
B. Four
C. One
D. Three

Answer: B

Sol: Given:
Seven boxes A, B, C, D, E, F and G are kept one over the other but not necessarily in the same order.
No box is kept above F.
Only three boxes are kept between F and E.
Only one box is kept between G and C.
C is kept immediately above E.
Only four boxes are kept between G and A.
B is kept at some place above D.
From the given information arrangement will be:

Position	Box
7	F
6	G
5	B
4	C
3	E
2	D
1	A

So, **Four(4)** boxes are kept above E.
Thus, the correct option is: (b)

Q.36 The diameters of the bases of two cones are equal. If their slant heights are in the ratio of 3 : 4, then what will the ratio of their curved surface areas be?

A. 19:16
B. 4:3
C. 6:9
D. 3:4

Answer: D

Sol: Given:
The diameters of the bases of the two cones are equal.

The slant heights of the two cones are in the ratio 3 : 4

Formula used:

r is the radius of the base,

l is the slant height.

The curved surface area of a cone = πrl

Solution:

Since the diameters of the two cones are equal, their radius will also be the same.

Let the slant height of the two cones be l_1 and l_2 respectively.

So, $l_1 : l_2 = 3 : 4$

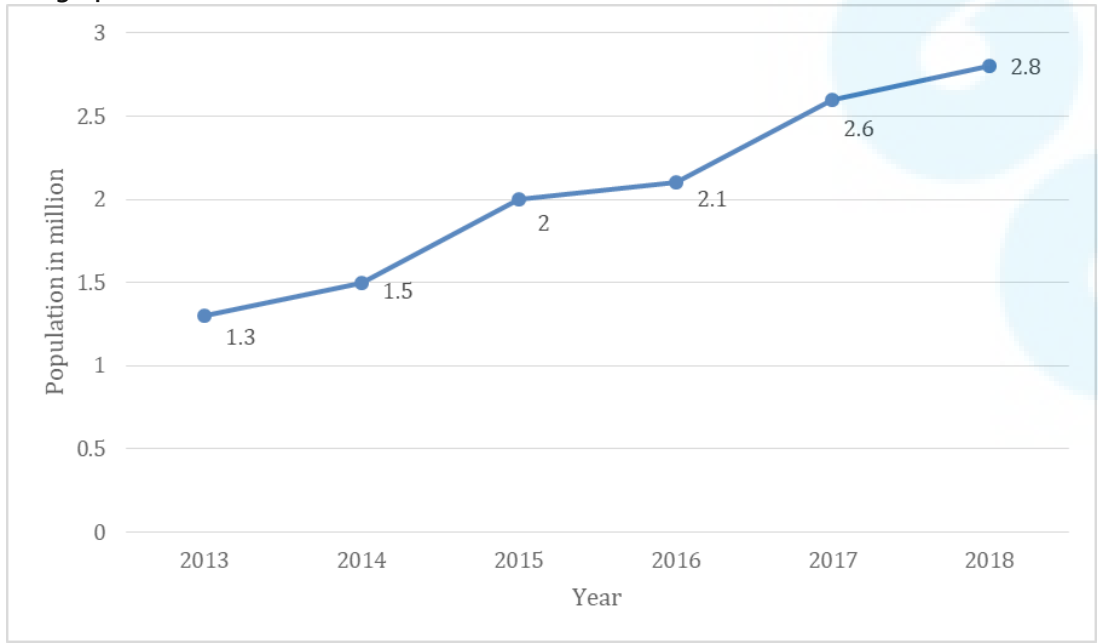The curved surface area of the two cones is $πrl_1$ and $πr l_2$.

So, the ratio of their curved surface area is $\dfrac{πrl_1}{πrl_2}$

π and r are canceled.

$$\frac{l_1}{l_2} = \frac{3}{4}$$

Therefore, the ratio of the curved surface area of two cones is **3 : 4.**

Q.37 The following line graph shows the population (in million) of Istanbul over 6 years (from 2013 to 2018). Answer the given question based on the line graph.

What is the approximate percentage increase in the population of Istanbul from 2013 to 2018?

A. 130%
B. 120%
C. 118%
D. 115%

Answer: D

Sol: Given:
Population of Istanbul in 2013 = 1.3 million

Population of Istanbul in 2018 = 2.8 million

Formula Used:

$$\text{Percentage Increase} = \left(\frac{\text{Increase in Population}}{\text{Population in 2013}}\right) \times 100$$

Solution:

Increase in population = 2.8−1.3=1.5 million

$$\text{Percentage Increase} = \left(\frac{1.5}{1.3}\right) \times 100 = 115.38\% \approx 115\ \%$$

Option (d) is right.

Q.38 In a certain code language, STUDFARM is written as FGHQSNEZ. How will NUCLEAR be written as in that language?

A. FLQYVNE
B. GSQUCNE
C. AHPYRNE
D. DKQTCNE

Answer: C

Sol: **Given:** STUDFARM is written as FGHQSNEZ
Logic: The pattern follows +13 places increases for each letter in English alphabet.

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

STUDFARM → FGHQSNEZ
S + 13 = F
T + 13 = G
U + 13 = H
D + 13 = Q
F + 13 = S
A + 13 = N
R + 13 = E
M + 13 = Z
Now, applying the same to **NUCLEAR:**
N + 13 = A
U + 13 = H
C + 13 = P
L + 13 = Y
E + 13 = R
A + 13 = N
R + 13 = E
Therefore, **NUCLEAR → AHPYRNE.**
Thus, the correct option is **(c) AHPYRNE.**

Q.39 A and B walk around a circular path of 10 km in circumference, starting together from the same point in the same direction. If their speeds are 3 km/h and 2 km/h respectively, after how many hours will they be again at the starting point?

A. 5 h
B. 2 h
C. 10 h
D. 3 h

Answer: C

Sol: **Given:**
Circumference of the circular path = 10 km
Speed of A = 3 km/h

Speed of B = 2 km/h

Both start together from the same point in the same direction.

Formula Used:

Time taken to complete one full round = $\dfrac{\text{Circumference}}{\text{Speed}}$

Solution:

$$\text{Time}_A = \dfrac{\text{Circumference}}{\text{Speed}_A} = \dfrac{10}{3}\ \text{hours}$$

$$\text{Time}_B = \dfrac{\text{Circumference}}{\text{Speed}_B} = \dfrac{10}{2} = 5\ \text{hours}$$

$$\text{Time}_A = \dfrac{10}{3}\ \text{hours}, \quad \text{Time}_B = 5 = \dfrac{15}{3}\ \text{hours}$$

LCM of $\dfrac{10}{3}$ and $\dfrac{15}{3}$ is $\dfrac{\text{LCM}(10,15)}{3} = \dfrac{30}{3} = 10$ hours.

They will both be at the starting point together after 10 hours.

Q.40 What is the main idea of the passage?

Read the passage and answer the following questions.

In the early decades of the 20th century, a new kind of "map" began to reshape how cities were governed. Instead of drawing only roads and rivers, planners started mapping diseases. When cholera or plague appeared in crowded neighbourhoods, officials noticed that outbreaks often followed patterns: contaminated water sources, poor drainage, and dense housing. This observation encouraged a shift from blaming individuals to examining systems. The city, in this view, was not merely a collection of people; it was an interconnected organism where pipes, wells, waste, and movement could spread health or harm.

Yet the rise of public health planning was not purely scientific. It was also political. Some authorities used disease maps to justify demolishing informal settlements while ignoring the factories or elite quarters that produced pollution. In other cases, reformers pushed for safer water, vaccination drives, and sanitation laws that benefited most citizens, including the poor. The same data could support either improvement or exclusion, depending on who interpreted it and whose voices were heard.

Over time, public health measures expanded from emergency responses to long-term reforms. Clean water systems reduced water-borne diseases; waste management lowered infection risks; and regulations improved food safety. Still, these gains were uneven. Communities with less political power often received fewer services, even when their needs were greater. The history of urban health therefore teaches a complex lesson: evidence can guide progress, but fairness depends on how evidence is used. True improvement requires not only technology and statistics, but also accountability, public participation, and equal access to basic services.

  A. Urban disease mapping was useless because outbreaks were random

  B. The passage explains how disease mapping shaped urban reform while also being used politically, producing uneven benefits

  C. The passage argues that only vaccination mattered in improving city health

  D. The passage focuses mainly on the design of roads and bridges

Answer: B

Sol: The correct answer is option (b).

  • The passage shows a dual impact: disease maps helped identify system-level causes (water, drainage, density) and inspired reforms.

  • It also highlights political misuse—targeting informal settlements while ignoring elite or industrial pollution—and notes unequal distribution of services.

Other options are incorrect because:

  • (a) The passage stresses patterns, not randomness.

  • (c) Vaccination is only one example; sanitation, water, and regulation are central.

  • (d) Roads/bridges are not the focus; public health infrastructure is.

Q.41 Which detail best supports the claim that health planning could become a tool of exclusion?

Read the passage and answer the following questions.

In the early decades of the 20th century, a new kind of "map" began to reshape how cities were governed. Instead of drawing only roads and rivers, planners started mapping diseases. When cholera or plague appeared in crowded neighbourhoods, officials noticed that outbreaks often followed patterns: contaminated water sources, poor drainage, and dense housing. This observation encouraged a shift from blaming individuals to examining systems. The city, in this view, was not merely a collection of people; it was an interconnected organism where pipes, wells, waste, and movement could spread health or harm.

Yet the rise of public health planning was not purely scientific. It was also political. Some authorities used disease maps to justify demolishing informal settlements while ignoring the factories or elite quarters that produced pollution. In other cases, reformers pushed for safer water, vaccination drives, and sanitation laws that benefited most citizens, including the poor. The same data could support either improvement or exclusion, depending on who interpreted it and whose voices were heard.

Over time, public health measures expanded from emergency responses to long-term reforms. Clean water systems reduced water-borne diseases;

can guide progress, but fairness depends on how evidence is used. True improvement requires not only technology and statistics, but also accountability, public participation, and equal access to basic services.

A. Officials observed that outbreaks followed patterns linked to systems
B. Some authorities used disease maps to justify demolishing informal settlements while ignoring sources of pollution elsewhere
C. Clean water systems reduced water-borne diseases
D. Regulations improved food safety

Answer: B

Sol: The correct answer is option (b).
- The passage explicitly states that authorities sometimes used maps to target informal settlements selectively.
- This indicates exclusion: the data served demolition decisions rather than equal reforms across all polluting areas.
Other options are incorrect because:
- (a) Shows system thinking, not exclusion.
- (c) and (d) are benefits, not examples of discriminatory use.

Q.42 Which situation best applies the passage's lesson about "evidence" and "fairness"?
Read the passage and answer the following questions.
In the early decades of the 20th century, a new kind of "map" began to reshape how cities were governed. Instead of drawing only roads and rivers, planners started mapping diseases. When cholera or plague appeared in crowded neighbourhoods, officials noticed that outbreaks often followed patterns: contaminated water sources, poor drainage, and dense housing. This observation encouraged a shift from blaming individuals to examining systems. The city, in this view, was not merely a collection of people; it was an interconnected organism where pipes, wells, waste, and movement could spread health or harm.
Yet the rise of public health planning was not purely scientific. It was also political. Some authorities used disease maps to justify demolishing informal settlements while ignoring the factories or elite quarters that produced pollution. In other cases, reformers pushed for safer water, vaccination drives, and sanitation laws that benefited most citizens, including the poor. The same data could support either improvement or exclusion, depending on who interpreted it and whose voices were heard.
Over time, public health measures expanded from emergency responses to long-term reforms. Clean water systems reduced water-borne diseases; waste management lowered infection risks; and regulations improved food safety. Still, these gains were uneven. Communities with less political power often received fewer services, even when their needs were greater. The history of urban health therefore teaches a complex lesson: evidence can guide progress, but fairness depends on how evidence is used. True improvement requires not only technology and statistics, but also accountability, public participation, and equal access to basic services.

A. A city bans all migration because migrants "cause" disease
B. A local leader refuses to collect data to avoid controversy
C. A city uses outbreak data to improve water lines in all wards and publicly audits spending to prevent biased allocation
D. A city uses disease maps only to increase police patrols in poor areas

Answer: C

Sol: The correct answer is option (c).
- The passage concludes that evidence can guide progress, but fairness needs accountability, participation, and equal access.
- Option (c) uses data for universal improvement and adds transparency, matching the passage's prescription.
Other options are incorrect because:
- (a) Blames individuals/groups, opposite of the system-based approach.
- (b) rejects evidence entirely.
- (d) mirrors the political misuse described.

Q.43 What is the organisational structure of the passage?
Read the passage and answer the following questions.
In the early decades of the 20th century, a new kind of "map" began to reshape how cities were governed. Instead of drawing only roads and rivers, planners started mapping diseases. When cholera or plague appeared in crowded neighbourhoods, officials noticed that outbreaks often followed patterns: contaminated water sources, poor drainage, and dense housing. This observation encouraged a shift from blaming individuals to examining systems. The city, in this view, was not merely a collection of people; it was an interconnected organism where pipes, wells, waste, and movement could spread health or harm.
Yet the rise of public health planning was not purely scientific. It was also political. Some authorities used disease maps to justify demolishing informal settlements while ignoring the factories or elite quarters that produced pollution. In other cases, reformers pushed for safer water, vaccination drives, and sanitation laws that benefited most citizens, including the poor. The same data could support either improvement or exclusion, depending on who interpreted it and whose voices were heard.
Over time, public health measures expanded from emergency responses to long-term reforms. Clean water systems reduced water-borne diseases; waste management lowered infection risks; and regulations improved food safety. Still, these gains were uneven. Communities with less political power often received fewer services, even when their needs were greater. The history of urban health therefore teaches a complex lesson: evidence can guide progress, but fairness depends on how evidence is used. True improvement requires not only technology and statistics, but also accountability, public participation, and equal access to basic services.

A. Compare and contrast of two empires' health systems
B. Chronological listing of medical discoveries
C.
D. A myth retold in sequential episodes

Answer: C

Sol: The correct answer is option (c).
• The passage links causes (mapping disease patterns, system analysis) to effects (sanitation reforms, long-term policies).
• It then evaluates how political choices shaped unequal distribution of benefits—still a cause-effect logic with judgement.
Other options are incorrect because:
• (a) No two empires are compared.
• (b) Not a year-by-year discovery list.
• (d) Not mythology.

Q.44 The tone of the passage is best described as:
Read the passage and answer the following questions.

In the early decades of the 20th century, a new kind of "map" began to reshape how cities were governed. Instead of drawing only roads and rivers, planners started mapping diseases. When cholera or plague appeared in crowded neighbourhoods, officials noticed that outbreaks often followed patterns: contaminated water sources, poor drainage, and dense housing. This observation encouraged a shift from blaming individuals to examining systems. The city, in this view, was not merely a collection of people; it was an interconnected organism where pipes, wells, waste, and movement could spread health or harm.

Yet the rise of public health planning was not purely scientific. It was also political. Some authorities used disease maps to justify demolishing informal settlements while ignoring the factories or elite quarters that produced pollution. In other cases, reformers pushed for safer water, vaccination drives, and sanitation laws that benefited most citizens, including the poor. The same data could support either improvement or exclusion, depending on who interpreted it and whose voices were heard.

Over time, public health measures expanded from emergency responses to long-term reforms. Clean water systems reduced water-borne diseases; waste management lowered infection risks; and regulations improved food safety. Still, these gains were uneven. Communities with less political power often received fewer services, even when their needs were greater. The history of urban health therefore teaches a complex lesson: evidence can guide progress, but fairness depends on how evidence is used. True improvement requires not only technology and statistics, but also accountability, public participation, and equal access to basic services.

A. Fearful and alarming
B. Balanced and analytical
C. Mocking and humorous
D. Highly emotional and personal

Answer: B

Sol: The correct answer is option (b).
• The passage weighs benefits and misuse, using measured language like "in other cases," "still," and "therefore."
• It ends with a reasoned conclusion about accountability and equal access, not emotion or sarcasm.
Other options are incorrect because:
• (a) It informs rather than warns dramatically.
• (c) No humour is present.
• (d) No personal narrative or emotional appeal dominates.

Q.45 The mean of a data is 76 and its median is 100. The mode (using empirical relation) of the data is:

A. 148
B. 60
C. 174
D. 77

Answer: A

Sol: **Given:**
Mean $= 76$, Median $= 100$
Concept Used:
Empirical relation between mean, median, and mode
Formula Used:
Mode $= 3(\text{Median}) - 2(\text{Mean})$
Solution:
Mode $= 3(100) - 2(76)$
$= 300 - 152$
$= 148$
Final Answer:
148

Q.46 If the first term of a geometric progression is 2 and the common ratio is 3, then what will be the fifth term of the geometric progression?

    A. 243
    B. 324
    C. 81
    D. 162

Answer: D

Sol: Given:
First term (a) = 2
Common ratio (r) = 3

Formula Used:
The n-th term of a geometric progression is given by the formula:

$$T_n = a \times r^{n-1}$$

Where:

T_n is the n-th term,

a is the first term,

r is the common ratio, and

n is the term number.

Solution:
For the fifth term (n = 5):

$$T_5 = 2 \times 3^{5-1} = 2 \times 3^4$$

$$T_5 = 2 \times 81 = 162$$

The fifth term of the geometric progression is 162.

Q.47 Pipe A can fill a tank in 16 hours, pipe B can fill the same tank in 28 hours and pipe C can fill the same tank in 8 hours. The time taken by them to fill the same tank if they operate together is:

    A. $4\dfrac{12}{25}\,hours$

    B. $2\dfrac{12}{25}\,hours$

    C. $8\dfrac{12}{25}\,hours$

    D. $11\dfrac{12}{25}\,hours$

Answer: A

Sol: Given:
Pipe A fills in 16 hours

Pipe B fills in 28 hours

Pipe C fills in 8 hours

Formula Used:

Time = Total work ÷ Total rate

Solution:

LCM of 16, 28, and 8 = 112 units (assumed tank capacity)

Work per hour:

$A = \dfrac{112}{16} = 7$ units

$B = \dfrac{112}{28} = 4$ units

$C = \dfrac{112}{8} = 14$ units

Total work per hour = 7 + 4 + 14 = 25 units

Time taken together = $\dfrac{112}{25} = 4\dfrac{12}{25}$ hours

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Q.48 Find the value of $\sqrt{212 + \sqrt{139 + \sqrt{900}}}$.

A. 25
B. 15
C. 20
D. 12

Answer: B

Sol: Given:
$$\sqrt{212 + \sqrt{139 + \sqrt{900}}}$$

Formula Used:
$$\sqrt{a + \sqrt{b + \sqrt{c}}}$$

Solution:
$\sqrt{900} = 30$
$\sqrt{139 + 30} = \sqrt{169} = 13$
$\sqrt{212 + 13} = \sqrt{225} = 15$

Final Answer:
$\boxed{15}$

Q.49 H, O, L, D, E, and R live on six different floors of the same building. The lowermost floor in the building is numbered 1, the floor above it, number 2 and so on, till the topmost floor is numbered 6. No one lives above L. Only three people live between L and R. H lives on a floor below R. E lives on an even numbered floor. O lives on an odd numbered floor but not on floor number 5. How many people live between D and R?

A. Zero
B. Two
C. Three
D. One

Answer: B

Sol: Given:
H, O, L, D, E, and R live on six different floors of the same building.
No one lives above L.
Only three people live between L and R.
H lives on a floor below R.
E lives on an even numbered floor.
O lives on an odd numbered floor but not on floor number 5.

Floor	Person
6	L
5	D
4	E
3	O
2	R
1	H

Two people live between D and R.

Thus, the correct option is (b).

Q.50 The table below gives the number of students passing an exam in a particular town.

Year	Girls	Boys
2016	128734	115526
2017	130567	124313
2018	129209	122131

Find the approximate average pass percentage in all three years, if the number of students appearing for the exam in any given year is 354000.

A. 74%
B. 68%
C. 71%
D. 73%

Answer: C

Sol: Given:

The number of students passing the exam each year:

2016: Girls = 128734, Boys = 115526 → Total = 244260

2017: Girls = 130567, Boys = 124313 → Total = 254880

2018: Girls = 129209, Boys = 122131 → Total = 251340

Total students appearing each year = 354000

Solution:

Total Passed = 244260 + 254880 + 251340 = 750480

Total Appeared =$354000 \times 3 = 1062000$

Average Pass %=$\left(\dfrac{750480}{1062000} \right) \times 100 \approx 71\%$

Q.51 A, B, C, D, E, F and G are sitting around a circular table facing the centre. F sits to the immediate right of G. B sits third to the left of G. A is the immediate neighbour of D and G. C sits second to the left of B. How many people sit between E and D when counted from the left of D?
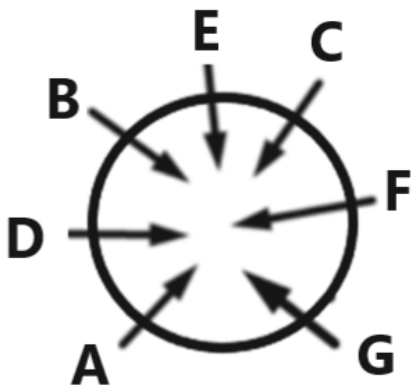
A. One
B. Four
C. Two
D. Three

Answer: A

Sol: **Given:**
A, B, C, D, E, F and G are sitting around a circular table facing the centre.
F sits to the immediate right of G.
B sits third to the left of G.
A is the immediate neighbour of D and G.
C sits second to the left of B.
From the given information seating arrangement will be:

So, **One person** sit between E and D when counted from the left of D.
Thus, the correct option is: (a)

Q.52 Income of Amit in 2019 was ₹22,000. He gets an increment of 20% every year. What was his income (in ₹) in 2021?

A. 26,400
B. 30,800
C. 31,680
D. 22,000

Answer: C

Sol: **Given:**
Income in 2019 = 22000
Rate of increment = 20%
Time = 2 years

Formula Used:
Final Income $= P \left(1 + \dfrac{r}{100} \right)^n$

Solution:
$= 22000 \left(1 + \dfrac{20}{100} \right)^2$
$= 22000 \times (1.2)^2$

$$= 22000 \times 1.44$$
$$= 31680$$

Q.53 Yash travels 200 km at 25 km/hr, the next 210 km at 21 km/hr and the next 204 km at 51 km/hr. What is his average speed (in km/hr) for the whole journey? (Round off your answer to two decimal places)

A. 30.01
B. 27.22
C. 27.91
D. 18.68

Answer: C

Sol: Given:

200 km at 25 km/h

210 km at 21 km/h

204 km at 51 km/h

Find the average speed for the whole journey.

Formula Used:

$$\text{Average Speed} = \frac{\text{Total Distance}}{\text{Total Time}}$$

Solution:

Total Distance **=** 200 + 210 + 204 = 614 km

$$\text{Average Speed} = \frac{614}{\frac{200}{25} + \frac{210}{21} + \frac{204}{51}}$$

$$= \frac{614}{22}$$

$$\approx 27.91 \text{ km/hr}$$

Q.54 Number 0.232323 can be written in rational form as:

A. $\dfrac{23}{99}$

B. $\dfrac{23}{990}$

C. $\dfrac{23}{999}$

D. $\dfrac{23}{9}$

Answer: A

Sol: Given:
0.232323
Solution:
Let y = 0.232323……. (1)
By multiplying y by 100
100y = 23.232323……. (2)
Now, subtract equ(2) - equ(1)
=> 100y - y = 23.232323 - 0.232323
=> 99y = 23
=> y = $\dfrac{23}{99}$

Q.55 2 times the present age of X is 7 years less than 6 times the present age of Y. At present, P is 2 times as old as X, and Y is 8 years younger than Q. If P is 50 years older than Q, then the present age (in years) of Y is:

A. 18
B. 13
C. 5
D. 12

Answer: B

Sol: **Given:**
$2x = 6y - 7$
$P = 2x$
$Q = y + 8$
$P = Q + 50$
Solution:
$2x - 6y = -7$
$2x = y + 58$
$(2x - 6y) - (2x - y) = -7 - 58$
$-5y = -65$
$y = 13$
Final Answer
$\boxed{13}$

Q.56 Based on the English alphabetical order, three of the following four letter-cluster pairs are alike in a certain way and thus form a group. Which letter-cluster pair DOES NOT belong to that group?

(Note: The odd one out is not based on the number of consonants/vowels or their position in the letter-cluster.)

A. KN-GI
B. SV-OQ
C. OR-KM
D. VY-RS

Answer: D

Sol:

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Let us examine the letter movement in each pair using English alphabetical order.
A) KN → GI
K – 4 = G
N – 5 = I
B) SV → OQ
S – 4 = O
V – 5 = Q
C) OR → KM
O – 4 = K
R – 5 = M
D) VY → RS
V – 4 = R
Y – **6** = S
In options A, B, and C, the first letter moves backward by 4 and the second letter moves backward by 5.
In option D, the second letter moves backward by 6, breaking the pattern.
Thus, the odd one out is (D).

Q.57 A sample of milk from a vessel contains 4% water. What quantity of pure milk should be added to 8 L of milk in the vessel to reduce the water content to 2%?

A. 8 L
B. 7 L
C. 7.5 L
D. 6.5 L

Answer: A

Sol: Given:

Current volume = 8 L

Water content = 4%

Milk content = 96% of 8 L = 7.68 L

Final water content = 2%

Concept Used:

Adding pure milk does not change the amount of water.

Solution:

Let the quantity of pure milk to be added = x L

4% of 8 L = 0.32 L

Now,

$$\frac{0.32}{8+x} = \frac{2}{100}$$

$$0.32 \times 100 = 2 \times (8+x)$$

32 = 16 + 2x

2x = 16

x = 8

Thus, 8 L of pure milk should be added

Alternate Solution:

	Milk		water
Ratio(intial)	24	:	1
Ratio(final)	49	:	1

49 - 24 = 25

$$\frac{8}{25} \times 25 = 8L$$

Q.58 The average weight of Vipul, Mohan, and Mohammad is 46 kg. If the average weight of Vipul and Mohan is 36 kg and that of Mohan and Mohammad is 43 kg, then the weight of Mohan (in kg) is:

A. 30
B. 20
C. 35
D. 40

Answer: B

Sol: Given:

Average weight of Vipul, Mohan, Mohammad = 46 kg

Average weight of Vipul and Mohan = 36 kg

Average weight of Mohan and Mohammad = 43 kg

Required: Weight of Mohan(M)

Formula Used:

From average: Sum = Average × Number of terms

Solution:

Total weight of Vipul, Mohan, Mohammad

V + M + Mo = 46 × 3 = 138 ......(1)

Total weight of Vipul and Mohan

V + M = 36 × 2 = 72 ....(2)

Total weight of Mohan and Mohammad

M + Mo = 43 × 2 = 86 ....(3)

From(2) and (3)

(V + M) + (M + Mo) = 72 + 86

V + 2M + Mo = 158 ....(4)

Subtract (1) from (4):

(V + 2M + Mo) - (V + M + Mo) = 158 - 138

M = 20

So, the weight of Mohan is 20 kg.

Q.59 The following are the weights (in kg) of 25 students:
58, 55, 53, 50, 53, 51, 52, 54, 53, 52, 54, 53, 58, 53, 59, 55, 53, 52, 51, 54, 53, 59, 55, 53, 52

What is the range of the given data?

A. 6
B. 7
C. 9
D. 8

Answer: C

Sol: **Given:**
Weights (in kg) of 25 students:

58, 55, 53, 50, 53, 51, 52, 54, 53, 52, 54, 53, 58, 53, 59, 55, 53, 52, 51, 54, 53, 59, 55, 53, 52

Formula Used:

Range=Maximum Value−Minimum Value

Solution:

Maximum Value = 59

Minimum Value = 50

Range=59−50=9

Option (c) is right.

Q.60 The tenth term of the sequence 2, 5, 8, 11, ...will be:

A. 28
B. 29
C. 32
D. 27

Answer: B

Sol: **Given:**

The arithmetic sequence:

2,5,8,11,...

Concept Used:

The nth term of an arithmetic sequence is given by the formula:

$$a_n = a + (n-1)d$$

where:

a = first term = 2

d = common difference = 5 - 2 = 3

n = 10

Solution:

$$a_{10} = 2 + (10-1) \times 3$$

=2+9×3

=2+27= 29

Option (B) is right.

Q.61 The percentage profit earned by selling a table lamp for ₹863 is equal to the percentage loss incurred by selling the same table lamp for ₹433. At what price (in ₹) should the table lamp be sold to make 25% profit?

A. 812
B. 810
C. 811
D. 813

Answer: B

Sol: **Given:**
Selling price with profit $= 863$
Selling price with loss $= 433$
Concept Used:
Profit and loss percentage
Formula Used:
$$\text{Profit \%} = \frac{\text{Profit}}{\text{CP}} \times 100$$
$$\text{Loss \%} = \frac{\text{Loss}}{\text{CP}} \times 100$$
Solution:
Let $\text{CP} = x$
$$\frac{863 - x}{x} = \frac{x - 433}{x}$$
$863 - x = x - 433$
$2x = 1296$
$x = 648$
Selling price for 25% profit $= 1.25 \times 648 = 810$
Final Answer:
810

Q.62 What is the median of the following distribution?

Class	140-190	190-240	240-290	290-340	340-390
Frequency	23	13	24	25	35

A. 301
B. 278
C. 290
D. 304

Answer: C

Sol: **Given:**
Class intervals: $140–190, 190–240, 240–290, 290–340, 340–390$
Frequencies: $23, 13, 24, 25, 35$
Formula Used:
$$\text{Median} = l + \left(\frac{\frac{N}{2} - c_f}{f} \right) h$$
Solution:
$N = 23 + 13 + 24 + 25 + 35 = 120$
$$\frac{N}{2} = 60$$
Median class $= 240–290$
$l = 240, c_f = 36, f = 24, h = 50$
$$\text{Median} = 240 + \left(\frac{60 - 36}{24} \right) 50$$
$= 240 + 50$
$= 290$
Final Answer:
290

Q.63 Find the next number in the given series:
9, 11, 15, 17, 21, 23, ?

A. 29

B. 28
C. 30
D. 27

Answer: D

Sol: **Given**: 9, 11, 15, 17, 21, 23, ?
Logic: Numbers are increasing + 2 and + 4 place alternately.
9 + 2 = 11
11 + 4 = 15
15 + 2 = 17
17 + 4 = 21
21 + 2 = 23
23 + 4 = **27**
So, the missing term is **27**.
Thus, correct option is (d).

Q.64 This question is based on the following words.

GOT HER WAR FIT

In each of the words, each vowel is changed to the letter immediately following it in the English alphabetical order and each consonant is changed to the letter immediately preceding it in the English alphabet. In how many letter-clusters thus formed will no vowel appear?

A. Three
B. One
C. Four
D. Two

Answer: A

Sol: **Given:**
GOT HER WAR FIT
Logic:
Vowels (A, E, I, O, U) → change to next letter
Consonants → change to previous letter
Words: GOT, HER, WAR, FIT
GOT: G → F, O → P, T → S → FPS (no vowels)
HER: H → G, E → F, R → Q → GFQ (no vowels)
WAR: W → V, A → B, R → Q → VBQ (no vowels)
FIT: F → E, I → J, T → S → EJS (E is a vowel)
So, 3 words have no vowels:
FPS, GFQ, VBQ
Thus, the correct option is (a).

Q.65 Find the perimeter of a rectangle whose length and breadth are 5 cm and 8 cm.

A. 20 cm
B. 26 cm
C. 39 cm
D. 13 cm

Answer: B

Sol: **Given :**
Length l = 5 cm
Breadth b = 8 cm

Formula Used :
$$\text{Perimeter of rectangle} = 2(l + b)$$

Solution :

Perimeter of rectangle
$$= 2(5 + 8) = 2 \times 13 = 26 \text{ cm}$$

Q.66 Which of the following letter-clusters should replace # and % so that the pattern and relationship followed between the letter-cluster pair on the left side of :: is the same as that on the right side of :: ?

: RWS :: INJ : %

A. # = NGV, % = FLP
B. # = PIV, % = MJU
C. # = UZV, % = FKG
D. # = CDR, % = KJI

Answer: C

Sol: Given: # : RWS :: INJ : %

Logic: Same letter-wise shift must work from # → RWS and from INJ → %.

1	2	3	4	5	6	7	8	9	10	11	12	13
A	B	C	D	E	F	G	H	I	J	K	L	M
Z	Y	X	W	V	U	T	S	R	Q	P	O	N
26	25	24	23	22	21	20	19	18	17	16	15	14

Option (A): # = NGV, % = FLP
N + 4 = R
G + 16 = W
V − 3 = S
Pattern for # → RWS = (+4, +16, −3)
I + 4 = M (not F)
N +16 = D (not L)
J − 3 = G (only last matches)
Pattern not same => Option (A) wrong.

Option (B): # = PIV, % = MJU
P + 2 = R
I − 12 = W
V − 3 = S
Pattern for # → RWS = (+2, −12, −3)
I + 2 = K (not M)
N −12 = B (not J)
J − 3 = G (only last matches)
Pattern not same => Option (B) wrong.

Option (C): # = UZV, % = FKG
U − 3 = R
Z − 3 = W
V − 3 = S
Pattern for # → RWS = (−3, −3, −3)
I − 3 = F
N − 3 = K
J − 3 = G
Same pattern (−3, −3, −3) for INJ → FKG => Option (C) follows the pattern.

Option (D): # = CDR, % = KJI
C + 15 = R
D + 15 = S
R + 1 = S (from RWS to CDR etc. pattern not consistent with INJ → KJI)
So pattern not same => Option (D) wrong.
Thus, the correct option is **(C) # = UZV, % = FKG.**

Q.67 Observe the table below and answer the following question:

YearPopulationConsumption of electricity (GW)

Year	Population	Consumption of electricity (GW)
2015	20	25
2016	30	40

2017	40	60
2018	50	80
2019	60	100

1 GW = 100 Million Watt

Population in Million

In which year did electricity consumption grow by 50%?

A. 2017
B. 2018
C. 2016
D. 2019

Answer: A

Sol: Formula Used:

$$\text{Percentage Increase} = \left(\frac{\text{Current Year Value} - \text{Previous Year Value}}{\text{Previous Year Value}} \right) \times 100$$

Solution:

From 2015 to 2016: $\left(\dfrac{40 - 25}{25} \right) \times 100 = 60\%$

From 2016 to 2017: $\left(\dfrac{60 - 40}{40} \right) \times 100 = 50\%$

From 2017 to 2018: $\left(\dfrac{80 - 60}{60} \right) \times 100 = 33.33\%$

From 2018 to 2019: $\left(\dfrac{100 - 80}{80} \right) \times 100 = 25\%$

Electricity consumption grew by 50% in the year 2017 (from 2016 to 2017).

Q.68 Three numbers are in the ratio 2: 3: 4. If their LCM is 480, then their HCF is:

A. 20
B. 40
C. 80
D. 2

Answer: B

Sol: Given:

$\text{Ratio} = 2 : 3 : 4$

$\text{LCM} = 480$

Concept Used:

Let the numbers be $2x, 3x, 4x$ where x is the HCF.

LCM of $(2x, 3x, 4x) = \text{LCM}(2, 3, 4) \times x$

Solution:

Find LCM of 2, 3, 4:

$\text{LCM}(2, 3, 4) = 12$

So, LCM of the numbers $= 12x$

Given LCM $= 480$

$$12x = 480$$

$$x = \frac{480}{12} = 40$$

Since x is the highest common factor:

$$HCF = 40$$

Final Answer

40

Q.69 For what prime number p in the number 3785p so that the number is exactly divisible by 3?

A. 7
B. 1
C. 3
D. 5

Answer: A

Sol: Given:
Number: 3785p
Formula Used:
A number is divisible by 3 if the sum of its digits is divisible by 3.
Solution:
Sum of digits of 3785p = 3 + 7 + 8 + 5 + p
Sum = 23 + p
To be divisible by 3, 23 + p must be divisible by 3.
Check for each prime number:
For p = 5: 23 + 5 = 28 (not divisible by 3)
For p = 3: 23 + 3 = 26 (not divisible by 3)
For p = 7: 23 + 7 = 30 (divisible by 3)

Confusion Point:
Many students stop after checking divisibility by 3 and forget the word "prime" in the question.
Yes, 23 + 1 = 24, which is divisible by 3
But 1 is NOT a prime number, so it cannot be the answer
Always check BOTH conditions:
1. Number divisible by 3
2. Value of p must be prime

Q.70 Refer to the following number and symbol series and answer the question that follows.
Counting to be done from left to right only.
(Left) 1 5 & 3 * $ 4 @ % 2 7 # 9 ^ # > 6 8 (Right)
How many such symbols are there, each of which is immediately preceded by a number and also immediately followed by another number?

A. One
B. Two
C. None
D. Three

Answer: B

Sol: Given:
(Left) 1 5 & 3 * $ 4 @ % 2 7 # 9 ^ # > 6 8 (Right)
Logic: Number | Symbols | Number
Let's check:
(Left) 1 5 & 3 * $ 4 @ % 2 7 # 9 ^ # > 6 8 (Right)
So, such **Two (2)** symbols are there, each of which is immediately preceded by a number and also immediately followed by another number.
Thus, the correct option is: (b)

Q.71 Amita travels a certain distance at a speed of 84 km/hr and double the earlier distance at 28 km/hr. She then returns to the starting point through the same route. If her average speed for the entire journey is 24 km/hr, then what is her speed (in km/hr) for the return journey?

A. 17.2
B. 16
C. 18
D. 21.5

Answer: C

Sol: **Given:**
$Speed_1 = 84$
$Speed_2 = 28$
Average speed $= 24$
Concept Used:
$$\text{Average speed} = \frac{\text{Total distance}}{\text{Total time}}$$
Formula Used:
$$\text{Average speed} = \frac{D}{T}$$
Solution:
Let first distance $= x$
Second distance $= 2x$
$Time_1 = \dfrac{x}{84}$
$Time_2 = \dfrac{2x}{28} = \dfrac{x}{14}$
Total onward distance $= 3x$
Total onward time $= \dfrac{x}{84} + \dfrac{x}{14} = \dfrac{x}{12}$
Total distance $= 6x$
Let return speed $= v$
Total time $= \dfrac{x}{12} + \dfrac{3x}{v}$
$24 = \dfrac{6x}{\frac{x}{12} + \frac{3x}{v}}$
$\dfrac{1}{12} + \dfrac{3}{v} = \dfrac{1}{4}$
$\dfrac{3}{v} = \dfrac{1}{6}$
$v = 18$
Final Answer:
18

Q.72 Following are the ages (in years) of 6 people in a group: 25, 30, 35, 40, 45 and 50. What is the standard deviation of their ages (rounded to two decimal places)?

A. 9.26
B. 7.38
C. 8.54
D. 6.57

Answer: C

Sol: **Given:**
Ages = 25, 30, 35, 40, 45, 50 (n = 6)

Formula Used:
Population Mean: $\bar{x} = \dfrac{\sum x_i}{n}$
Population Variance: $\sigma^2 = \dfrac{\sum(x_i - \bar{x})^2}{n}$
Population Standard Deviation: $\sigma = \sqrt{\sigma^2}$

Solution:
$\bar{x} = \dfrac{25 + 30 + 35 + 40 + 45 + 50}{6} = \dfrac{225}{6} = 37.5$

Squared deviations:
$(25 - 37.5)^2 = 156.25, (30 - 37.5)^2 = 56.25, (35 - 37.5)^2 = 6.25,$
$(40 - 37.5)^2 = 6.25, (45 - 37.5)^2 = 56.25, (50 - 37.5)^2 = 156.25$

$$\sum(x_i - \bar{x})^2 = 437.5$$

$$\sigma^2 = \dfrac{437.5}{6} = 72.9167$$

$\sigma = \sqrt{72.9167} \approx 8.54$

Q.73 In a class consisting of 67 students, Teena ranked 12th from the top and her friend Rishabh ranked 26th from the bottom. How many students ranked between Teena and Rishabh?

A. 33
B. 27
C. 28
D. 29

Answer: D

Sol: Given:
In a class consisting of 67 students, Teena ranked 12th from the top and her friend Rishabh ranked 26th from the bottom.
Solution:
Total students = 67
Teena's rank from top = 12
Rishabh's rank from bottom = 26
Rishabh's rank from top = 67 - 26 + 1 = 42
Now, number of students between them = 42 - 12 - 1 = **29**
So, **29** students ranked between Teena and Rishabh.
Thus, correct option is (d).

Q.74 A sum of money is to be distributed among A, B, C, and D in the ratio of 14 : 7 : 11 : 10. If C gets ₹196 more than B, how much did A receive?

A. ₹684
B. ₹686
C. ₹688
D. ₹685

Answer: B

Sol: Given:
$A : B : C : D = 14 : 7 : 11 : 10$
$C - B = 196$
Concept Used:
Ratio and Proportion
Formula Used:
Difference in amount = (Difference in ratio units) × (Value of one unit)
Solution:
$11 - 7 = 4$
$4 \text{ units} = 196$
$1 \text{ unit} = \dfrac{196}{4} = 49$
$A = 14 \times 49 = 686$
Final Answer:
686

Q.75 M is inversely proportional to N. If M is 18, then N is 10. If N = 9, then what is the value of M?

A. 22
B. 21
C. 23
D. 20

Answer: D

Sol: Given:
M is inversely proportional to N

When M = 18, N = 10

Find M when N = 9

Concept Used:

In inverse proportion, the product of the two variables remains constant:

M × N = constant

Solution:

From the first condition:

18 × 10 = 180

Now using this constant for the new value:

M × 9 = 180

$$M = \frac{180}{9} = 20$$

Q.76 The selling price of 34 books is equal to the cost price of 17 books. Find the loss or gain percentage.

A. 50% loss
B. $\frac{100}{17}$ % gain
C. 50 % gain
D. $\frac{100}{17}$ % loss

Answer: A

Sol: **Given:**
SP of 34 books = CP of 17 books

Formula Used:
$$\text{Gain/Loss } \% = \frac{\text{Gain or Loss}}{\text{Cost Price}} \times 100$$

Solution:
Let CP of 1 book = C
CP of 17 books = $17C$
SP of 34 books = $17C$
SP of 1 book = $\frac{17C}{34} = \frac{C}{2}$
Loss per book = $C - \frac{C}{2} = \frac{C}{2}$
Loss % = $\frac{\frac{C}{2}}{C} \times 100 = 50\%$

Final Answer:
$\boxed{\text{Loss } = 50\%}$

Q.77 The 7-digit number 51A808B is divisible by 24. What is the minimum value of (A + B)?

A. 5
B. 3
C. 2
D. 6

Answer: C

Sol: **Given:**

7-digit number $= 51A808B$
The number is divisible by 24

Formula Used:

A number is divisible by 24 if it is divisible by 3 and 8

Solution:

Step 1: Divisibility by 8
Last three digits of the number $= 08B$
Since 80 is divisible by 8, B must be a multiple of 8
$=> B = 0$ or 8

To get the minimum value of $(A + B)$, take $B = 0$

Step 2: Divisibility by 3
Sum of digits $= 5 + 1 + A + 8 + 0 + 8 + B$
$= 22 + A + B$

For divisibility by 3 :
$22 + A + B \equiv 0 \pmod 3$
$22 \equiv 1 \pmod 3$
$=> A + B \equiv 2 \pmod 3$

With $B = 0, A \equiv 2 \pmod 3$
$=>$ Minimum value of $A = 2$

Minimum value of $(A + B) = \boxed{2}$

Q.78 The sum of 4 consecutive odd numbers is 160. Find the smallest number.

A. 37
B. 27
C. 35
D. 25

Answer: A

Sol: **Given:**

The sum of 4 consecutive odd numbers is 160.

Solution:

Let the numbers be: $x, x + 2, x + 4, x + 6$
then,

$$x + (x + 2) + (x + 4) + (x + 6) = 160$$

$$4x + 12 = 160$$

$$4x = 148$$

$$\implies x = 37$$

Q.79 If + means –, – means ×, × means ÷ and ÷ means +, then what will come in place of the question mark (?) in the following equation?
12 – 2 + 49 × 7 ÷ 5 = ?

A. 22
B. 27
C. 12
D. 17

Answer: A

Sol: **Given:**

Sign + - × ÷

Means - × ÷ +

Operation preference wise	Symbol
Brackets	[], , ()
Orders, of	$(power), \sqrt{}(root), of$
Division	÷
Multiplication	×
Addition	+
Subtraction	−

Step-by-step:

12 − 2 + 49 × 7 ÷ 5

→ 12 × 2 − 49 ÷ 7 + 5

→ 24 − 7 + 5

→ 22

Final Answer:

22

Final Correct Option:

(A)

Q.80 Hemant and Irfan can complete a certain piece of work in 6 and 10 days, respectively, They started to work together, and after 2 days, Irfan left. In how many days will Hemant complete the remaining work?

A. $\dfrac{9}{5}$

B. $\dfrac{17}{5}$

C. $\dfrac{11}{5}$

D. $\dfrac{14}{5}$

Answer: D

Sol: **Given:**

Hemant can complete the work in 6 days

Irfan can complete the work in 10 days

Both work together for 2 days, then Irfan leaves

Formula Used:

Work done = Efficiency × Time

Solution:

Take total work = LCM of 6 and 10 = 30 units

Daily work:

Hemant = $\dfrac{30}{6}$ = 5 units/day

Irfan = $\dfrac{30}{10}$ = 3 units/day

Work done together per day:

5 + 3 = 8 units/day

Work done in 2 days together:

2 × 8 = 16 units

Remaining work:

30 - 16 = 14 units

Time taken by Hemant alone:

Time = $\dfrac{14}{5}$ days

Q.81 The arithmetic mean of the observations 28, 31, 40, 63, 57, 37, 34, 70 and 99 is:

A. 55
B. 50
C. 41
D. 51

Answer: D

Sol: Given:
Observations: 28, 31, 40, 63, 57, 37, 34, 70, 99

Formula Used:
Arithmetic Mean $= \dfrac{\text{Sum of observations}}{\text{Number of observations}}$

Solution:
Sum = 28 + 31 + 40 + 63 + 57 + 37 + 34 + 70 + 99 = 459
Number of observations = 9
Mean $= \dfrac{459}{9} = 51$

Q.82 What will come in place of the question mark (?) in the following equation, if '+' and '−' are interchanged and '×' and '÷' are interchanged?
28 + 125 × 5 – 12 ÷ 3 = ?

A. 28
B. 46
C. 39
D. 21

Answer: C

Sol: Given: 28 + 125 × 5 – 12 ÷ 3 = ?

Given Sign   + ×

Interchangd Sign - ÷

Using **BODMAS** rule.

Operation preference wise	Symbol
Brackets	[ ], , ( )
Orders, of	$(power), \sqrt{}(root), of$
Division	÷
Multiplication	×
Addition	+
Subtraction	−

New equation: 28 - 125 ÷ 5 + 12 × 3 = ?
28 - 25 + 12 × 3 = ?
28 - 25 + 36 = ?
64 - 25 = ?
? = **39**

Thus, correct option is (c).

Q.83 The simplified value of 72 - (-98) × (-31 - 58 - 19) ÷ [9 × { 7 + (-2) × (-6)}] is:

A. $\dfrac{192}{19}$

B. $\dfrac{182}{19}$

C. $\dfrac{187}{19}$

D. $\dfrac{188}{19}$

Answer: A

Sol: **Given:**

72 - (-98) × (-31 - 58 - 19) ÷ [9 × { 7 + (-2) × (-6)}]

Concept Used:

Operation preference wise	Symbol
Brackets	[], {}, ()
Orders, of	^{x} (power), √ (root), of
Division	÷
Multiplication	×
Addition	+
Subtraction	-

Solution:

72 - (-98) × (-31 - 58 - 19) ÷ [9 × { 7 + (-2) × (-6)}]

= 72 - (-98) × (-108) ÷ [9 × { 7 + 12}]

= 72 - (-98) × (-108) ÷ [9 × 19]

= 72 - (-98) × $\dfrac{-12}{19}$

= 72 - $\dfrac{1176}{19}$

= $\dfrac{1368 - 1176}{19}$

= $\dfrac{192}{19}$

Q.84 A alone can complete a piece of work in 15 days, while B alone can do it in 30 days, if the both of them work on alternate days, when will the work get completed?

  A. Cannot be determined
  B. 24 days
  C. 20 days
  D. 18 days

Answer: C

Sol: Given:

A alone completes the work in 15 days.

So, A's 1-day work = $\dfrac{1}{15}$

B alone completes the work in 30 days.

So, B's 1-day work = $\dfrac{1}{30}$

They work on alternate days, starting with A.

Concept Used:

In 2 days, work done = A's 1-day work + B's 1-day work.

We continue this cycle until the work is completed.

Solution:

$$\text{Work done in 2 days} = \frac{1}{15} + \frac{1}{30} == \frac{2}{30} + \frac{1}{30} = \frac{3}{30} = \frac{1}{10}$$

So, in 2 days, they complete $\dfrac{1}{10}$ of the work.

Since total work is 1, we calculate the number of full 2-day cycles:

$$\text{Full cycles needed} = \frac{1}{\frac{1}{10}} = 10 \text{ cycles}$$

Each cycle takes 2 days, so:

10×2=20 days

Option (C) is right.

Q.85 In a certain code language,
' P + Q ' means ' P is the son of Q ',
' P - Q ' means ' P is the wife of Q ',
' P × Q ' means ' P is the husband of Q ' and
' P ÷ Q ' means ' P is the brother of Q ',
How is A related to E if ' A + B - C + D × E '?

  A. Son's son
  B. Daughter's son
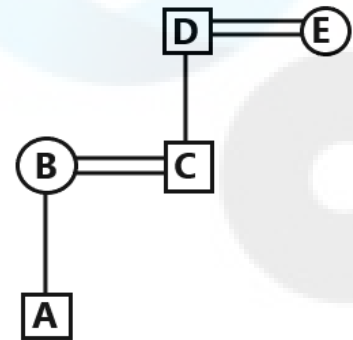 C. Brother
  D. Son

Answer: A

Sol: **Given:**

P + Q means P is the son of Q

A + B - C + D × E ?

Relation Son Wife Husband Brother

Symbols + - × ÷

Symbol in Diagram	Meaning
- / O	Female
+ / □	Male
=	Married Couple
—	Siblings
⊤	Difference Of Generation

From the given information Relationship Diagram will be:

A is related to **E** as a **Son's son.**

Thus, the correct option is **(a) Son's son.**

Q.86 20 men and 15 boys can do a piece of word in 10 days. 25 men and 10 boys can do it in 9 days. find the ratio of the daily work done by a man to that of a boy.

A. 14 : 5
B. 5 : 12
C. 12 : 5
D. 5 : 14

Answer: C

Sol: **Given:**

20 men and 15 boys can do a piece of work in 10 days and 25 men and 10 boys can do it in 9 days.

Formula Used:

Total Work = Working capacity × total time taken

Solution:

Let the working capacity of men be 'x'

Let the working capacity of boys be 'y'

According to the question

=> (20 x + 15 y) × 10 = (25 x + 10 y) × 9

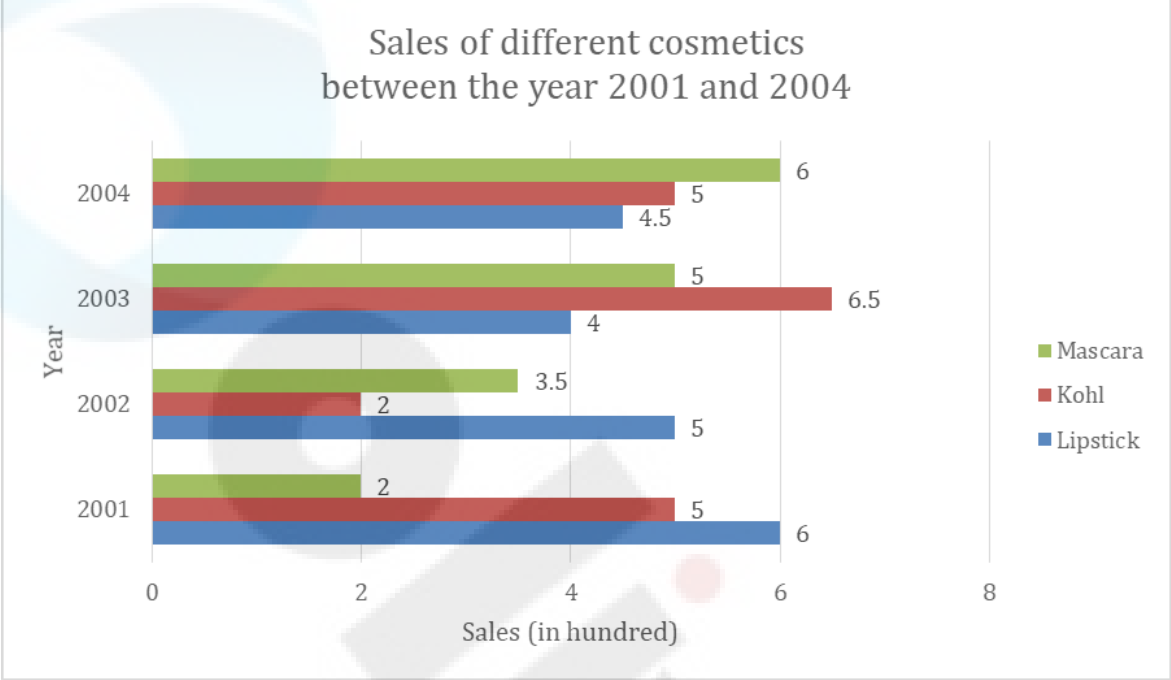=> 200 x + 150 y = 225 x + 90 y

=> 60 y = 25 x

=> 12 y = 5 x

=> y/x = 5/12

So,

=> x : y = 12 : 5

Hence, option (c) is the correct answer.

Q.87 According to the following graph, find the average annual percentage growth of mascara through the years 2001, 2002, 2003 and 2004.

A. 75%
B. 50%
C. 100%
D. 46%

Answer: D

Sol: Given:
Sales of Mascara (from the graph):

2001: 2 (in hundreds, or 200 units)

2004: 6 (in hundreds, or 600 units)

Number of years (n): From 2001 to 2004 = 3 years.

Concept Used:

The Compound Annual Growth Rate (CAGR) formula is used to find the average annual percentage growth rate over a period.

The formula is:

$$CAGR = \left(\frac{\text{Final Value}}{\text{Initial Value}}\right)^{\frac{1}{n}} - 1$$

Solution:

Substitute the values into the formula:

$$CAGR = \left(\frac{600}{200}\right)^{\frac{1}{3}} - 1$$

$$= (3)^{\frac{1}{3}} - 1$$

The cube root of 3 is approximately 1.46.

$$CAGR = 1.46 - 1 = 0.46$$

$$CAGR = 0.46 \times 100 = 46\%$$

Thus the average annual percentage growth of mascara sales from 2001 to 2004 is 46%.

Q.88 A cylindrical rod has an outer curved surface area of 1800 cm². If the length of the rod is 52 cm, then the outer radius (in cm) of the rod, correct to two places of decimal, is:
Take π = 22/7.

A. 6.32
B. 5.51
C. 5.37
D. 6.69

Answer: B

Sol: Given:
Curved surface area $= 1800$
$h = 52$
$\pi = \dfrac{22}{7}$
Concept Used:
Surface area of cylinder
Formula Used:
$CSA = 2\pi r h$
Solution:
$2 \times \dfrac{22}{7} \times r \times 52 = 1800$

$\dfrac{2288}{7} r = 1800$

$r = \dfrac{1800 \times 7}{2288}$

$r = \dfrac{12600}{2288}$

$r \approx 5.50524$
Final Answer:
5.51

Q.89 The length of each of the two equal sides of an isosceles triangle is 41 cm and the length of its base is 18 cm. The area (in cm²) of the triangle is:

A. 351
B. 355
C. 360
D. 365

Answer: C

Sol: Given:
Length of equal sides = 41 cm

Length of base = 18 cm

Concept Used:

In an isosceles triangle, the altitude from the vertex to the base bisects the base, forming two right-angled triangles.

Formula Used:

Height h = $\sqrt{a^2 - \left(\dfrac{b}{2}\right)^2}$

Area of triangle $= \dfrac{1}{2} \times \text{base} \times \text{height}$

Solution:

Base b = 18 $=> \dfrac{b}{2} = 9$

Equal side a = 41

$$h = \sqrt{41^2 - 9^2} = \sqrt{1681 - 81} = \sqrt{1600} = 40 \text{ cm}$$

Now,

Area $= \dfrac{1}{2} \times 18 \times 40 = 9 \times 40 = 360 \text{ cm}^2$

Q.90 What is the main idea of the passage?

Read the passage and answer the following questions.

Many myths describe a human who tries to steal a divine secret—fire, immortality, or forbidden knowledge—and pays a price. Such stories are often treated as warnings against arrogance. But they also function like social instruction manuals. By turning curiosity into a dramatic plot, myths teach communities how to manage new powers without destroying trust. When a society faces a disruptive skill—metalworking, navigation, writing, or modern technology—it must decide who may use it, under what rules, and with what responsibility. Myths compress these debates into memorable scenes.

Consider the recurring pattern: a gift is taken from a god; the gift improves life; and the punishment defines boundaries. The gift explains progress, while the punishment explains restraint. Importantly, the restraint is not always purely moral. It can be political: rulers may present themselves as guardians who control dangerous knowledge. At the same time, myths can protect ordinary people by demanding that powerful individuals face limits. A story that punishes the overreaching hero may be less about rejecting innovation and more about placing innovation inside a framework of accountability.

This is why myth remains relevant even in technological cultures. When people debate artificial intelligence, genetic editing, or surveillance, they often repeat mythic questions: Who benefits? Who bears the risk? Who decides what is "too much"? The language may be modern, but the structure is old. Myths, then, are not frozen fantasies. They are tools for thinking—systems for balancing desire for advancement with fear of harm, and for turning complex social problems into narratives that communities can remember and argue about.

A. Myths are childish stories that have no purpose today

B. The passage argues that myths about stealing divine secrets function as social frameworks that balance innovation with accountability, and they still shape modern debates

C. The passage claims that all myths were created only to entertain rulers

D. The passage proves that technology always leads to punishment

Answer: B

Sol: The correct answer is option (b).

- The passage reframes myths as "instruction manuals" that set rules for using disruptive powers responsibly.
- It links this myth-structure to modern ethical debates on AI, genetics, and surveillance.

Other options are incorrect because:

- (a) The passage explicitly says myths remain relevant.
- (c) Rulers are mentioned as one possible user of myths, not the only purpose.
- (d) The passage discusses punishment as boundary-setting, not as proof that technology must be punished.

Q.91 Which detail best supports the passage's claim that myths "compress debates" into stories?

Read the passage and answer the following questions.

Many myths describe a human who tries to steal a divine secret—fire, immortality, or forbidden knowledge—and pays a price. Such stories are often treated as warnings against arrogance. But they also function like social instruction manuals. By turning curiosity into a dramatic plot, myths teach communities how to manage new powers without destroying trust. When a society faces a disruptive skill—metalworking, navigation, writing, or modern technology—it must decide who may use it, under what rules, and with what responsibility. Myths compress these debates into memorable scenes.

Consider the recurring pattern: a gift is taken from a god; the gift improves life; and the punishment defines boundaries. The gift explains progress, while the punishment explains restraint. Importantly, the restraint is not always purely moral. It can be political: rulers may present themselves as guardians who control dangerous knowledge. At the same time, myths can protect ordinary people by demanding that powerful individuals face limits. A story that punishes the overreaching hero may be less about rejecting innovation and more about placing innovation inside a framework of accountability.

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structure is old. Myths, then, are not frozen fantasies. They are tools for thinking—systems for balancing desire for advancement with fear of harm, and for turning complex social problems into narratives that communities can remember and argue about.

A. Myths always include magical animals
B. Myths turn questions about who may use a disruptive skill and under what rules into memorable scenes of gifts and punishments
C. Myths are written only in poetic language
D. Myths avoid politics completely

Answer: B

Sol: The correct answer is option (b).
• The passage explains that societies debate rules and responsibilities around new powers, and myths convert these into plot structures (gift → benefit → punishment).
• This is exactly what "compressing debates into scenes" means in context.
Other options are incorrect because:
• (a) Not stated; too specific and unsupported.
• (c) Writing style is not the main evidence.
• (d) The passage says myths can be political.

Q.92 Which situation best reflects the passage's interpretation of "punishment" in these myths?

Read the passage and answer the following questions.

Many myths describe a human who tries to steal a divine secret—fire, immortality, or forbidden knowledge—and pays a price. Such stories are often treated as warnings against arrogance. But they also function like social instruction manuals. By turning curiosity into a dramatic plot, myths teach communities how to manage new powers without destroying trust. When a society faces a disruptive skill—metalworking, navigation, writing, or modern technology—it must decide who may use it, under what rules, and with what responsibility. Myths compress these debates into memorable scenes.

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A. A story punishes a hero to prove curiosity is always evil
B. A society uses a cautionary tale to set rules so that powerful tools are used under accountability rather than without limits
C. A community bans all learning to avoid risk
D. A ruler encourages unrestricted access to surveillance tools because myths celebrate power

Answer: B

Sol: The correct answer is option (b).
• The passage says punishment often defines boundaries and can be about accountability, not simply rejecting innovation.
• Option (b) matches this: caution is used to regulate power responsibly.
Other options are incorrect because:
• (a) Misreads the passage; it says not always moral condemnation.
• (c) Opposes the idea of balancing advancement with limits.
• (d) Contradicts the passage's focus on restraint and limits on power.

Q.93 What is the organisational structure of the passage?

Read the passage and answer the following questions.

Many myths describe a human who tries to steal a divine secret—fire, immortality, or forbidden knowledge—and pays a price. Such stories are often treated as warnings against arrogance. But they also function like social instruction manuals. By turning curiosity into a dramatic plot, myths teach communities how to manage new powers without destroying trust. When a society faces a disruptive skill—metalworking, navigation, writing, or modern technology—it must decide who may use it, under what rules, and with what responsibility. Myths compress these debates into memorable scenes.

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A. Sequential steps for writing a myth
B. Compare and contrast between two mythological characters only

C. Description with cause-effect reasoning: myths shape social rules around innovation and reappear in modern tech debates

D. Chronological account of myth creation century by century

Answer: C

Sol: The correct answer is option (c).
• The passage describes what myths do (social instruction) and explains effects: they create boundaries, can serve politics, and guide modern ethical framing.
• This is descriptive with clear cause-effect logic.
Other options are incorrect because:
• (a) No "how-to" steps are provided.
• (b) Not limited to two characters.
• (d) No historical timeline is presented.

Q.94 The style of the passage is best described as:

Read the passage and answer the following questions.

Many myths describe a human who tries to steal a divine secret—fire, immortality, or forbidden knowledge—and pays a price. Such stories are often treated as warnings against arrogance. But they also function like social instruction manuals. By turning curiosity into a dramatic plot, myths teach communities how to manage new powers without destroying trust. When a society faces a disruptive skill—metalworking, navigation, writing, or modern technology—it must decide who may use it, under what rules, and with what responsibility. Myths compress these debates into memorable scenes.

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A. Argumentative and interpretive, using patterns to connect mythology with modern culture

B. Purely scientific with formulas and data tables

C. Comedic and satirical

D. Personal diary writing

Answer: A

Sol: The correct answer is option (a).
• The passage interprets myths (what they "function" as) and argues for relevance to modern tech debates through recurring structures.
• It builds an analytical argument rather than presenting data, humour, or personal experience.
Other options are incorrect because:
• (b) No technical data or formulas are used.
• (c) No satire appears.
• (d) It is not written as a personal narrative.

Q.95 P and Q started a business with equal capital. P withdrew from the business at the end of 4 months. If, at the end of the year, the business made a profit of 6,400, then the share of P is:

A. Rs. 1,600

B. Rs. 3,200

C. Rs. 1,800

D. Rs. 1,750

Answer: A

Sol: Given:
Total profit = Rs6400

p invested for = 4 months

q invested for = 12 months

Solution:

ratio of their profit = ratio of months they invested because investment is same

P:Q =4:12

=1:3

so profit P = $\dfrac{6400 \times 1}{1+3}$

=6400\4

=RS1600

Q.96 If the length of a cuboid is 33 cm, breadth is 4 cm and volume is 7524 cm³, then find the height (in cm) of the cuboid.
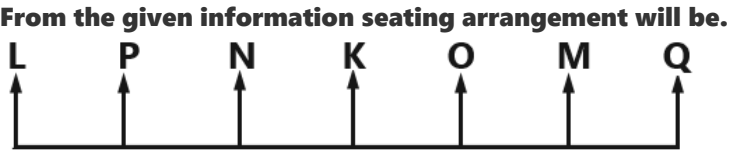
A. 60
B. 57
C. 54
D. 67

Answer: B

Sol: **Given:**
$l = 33, \quad b = 4, \quad \text{Volume} = 7524$
Concept Used:
Volume of cuboid
Formula Used:
$\text{Volume} = l \times b \times h$
Solution:
$7524 = 33 \times 4 \times h$
$7524 = 132h$
$h = \dfrac{7524}{132} = 57$
Final Answer:
57

Q.97 Seven people, K, L, M, N, O, P, and Q are sitting in a straight line facing north. Only three people sit between L and O. Only two people sit to the right of O. K sits second to the right of P. K is not an immediate neighbour of Q. O sits to the immediate left of M. Who sits at the extreme left end of the line?

A. N
B. P
C. M
D. L

Answer: D

Sol: **Given:**
Seven people K, L, M, N, O, P and Q are sitting in a straight line facing north.
Only three people sit between L and O.
Only two people sit to the right of O.
K sits second to the right of P.
K is not an immediate neighbour of Q.
O sits to the immediate left of M.
From the given information seating arrangement will be.

L   P   N   K   O   M   Q

L sits at the extreme left end of the line.
Thus, correct option is (d).

Q.98 Read the given data and answer the question that follows.

2, 5, 15, 25, 20, 12, 8, 7, 6, 16, 21, 17, 30, 32, 23, 40, 51, 15, 2, 9, 57, 19, 25

If the given data is grouped in the classes 0-5, 5-10, 10-15, and so on, then what will be the frequency of the class 20-25?

A. 4
B. 3
C. 5
D. 2

Answer: B

Sol: Given:

The data provided is:

2,5,15,25,20,12,8,7,6,16,21,17,30,32,23,40,51,15,2,9,57,19,25
The classes are:

0–5, 5–10, 10–15, 15–20, 20–25, and so on.

to find the frequency of the class 20–25.

Concept Used:

The frequency of a class is the count of data points that fall within that class interval.
For a class a–b, the values x such that a ≤ x < b are included.

Solution:

Identify the values that fall within the class 20–25(i.e., 20 ≤ x < 25):

From the given data: 20, 21 ,23

Total: 3 values.

The frequency of the class 20–25 is 3

Option (b) is right

Q.99 A box contains 6 white, 2 black and 3 red balls. If a ball is drawn at random, what is the probability that it will not be white?

A. $\frac{5}{6}$
B. $\frac{6}{5}$
C. $\frac{5}{11}$
D. $\frac{6}{11}$

Answer: C

Sol: Given:

Total balls = 6+2+3=11
White balls = 6
Non-white balls (Red and Black) = 11−6=5

Formula Used:

Probability of an event E is given by:

$$P(E) = \frac{\text{Favorable outcomes}}{\text{Total outcomes}}$$

$$P(\text{Not White}) = 1 - P(\text{White})$$

or

$$P(\text{Not White}) = \frac{\text{Non-white balls}}{\text{Total balls}}$$

Solution:

$$P(\text{Not White}) = \frac{5}{11}$$

Option (C) is right.

Q.100 Refer to the following number and symbol series and answer the question that follows.
Counting to be done from left to right only.
(NOTE: All numbers are single digit numbers only.)
(Left) 7 @ £ 1 @ 7 # * 8 7 8 6 5 3 8 4 € # £ 9 1 £ (Right)
How many such symbols are there each of which is immediately preceded by a number and also immediately followed by a number?

A. 1
B. 3
C. 2
D. 0

Answer: A

Sol: Given: (Left) 7 @ £ 1 @ 7 # * 8 7 8 6 5 3 8 4 € # £ 9 1 £ (Right)
Logic: number | symbol | number
7 @ £ **1 @ 7** # * 8 7 8 6 5 3 8 4 € # £ 9 1 £
Only **one** such symbols are there each of which is immediately preceded by a number and also immediately followed by a number.
Thus, correct option is (A).